

IS EXPERIENCE ALWAYS THE BEST TEACHER?  
THE EFFECTS OF DIRECT EXPERIENCE AND SALIENT NORMATIVE  
MESSAGES ON ADOPTION BEHAVIOR IN DISTANCE EDUCATION

By

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For Jim, Sarah, Jessica, and Andrew.

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The purpose of this study was to examine the effect of moderating variables on the attitude-behavior relationship within the context of a specific new media adoption behavior--education at a distance. Despite numerous predictions over the past several years that development of the Internet and the World Wide Web would revolutionize mediated instruction and create a new paradigm for teaching and learning, there is still a fair amount of controversy about the viability and impact of technology-based distance learning environments.

The present study attempted to build on the already well-developed foundation of theory regarding attitude-behavior relationships by exploring to what degree direct experience of technology based distance education exerted an influence on attitude strength, certainty, and behavior toward taking a distance education course for traditional

aged college students. In addition, the study looked at how information designed to enhance the salience of normative influences might affect behavior and behavioral intent for those subjects whose lack of direct experience and corresponding lower attitude certainty might make them more susceptible to such influence.

A sample population consisting of 91 undergraduates participated in a 2x2x3 repeated measures design in which experience and subjective norms feedback served as the between-subjects factors and time of measurement served as the within-subjects factor.

Results indicated that although the attitude-behavior correlation remained fairly consistent across all groups, attitude certainty was significantly higher across the time of measure for subjects who received direct experience of distance education than for subjects who received only indirect experience. In addition, a simple interaction effect was found for subjects in the indirect experience condition who were exposed to positive subjective norms information, indicating more positive behavioral intent for those subjects than for those exposed to either negative or neutral norms information.

Finally, linear regression analysis revealed that for all subjects, attitude, and subjective norms were the most important predictor variables of behavioral intent, while the subjective norms variable was the only significant predictor of behavioral intent for the indirect experience group.

## CHAPTER 1 INTRODUCTION

Why don't people always behave as we would expect? One of the most interesting aspects of the attitude-behavior relationship is how often it can be characterized by the phrase "it depends." Even when we know what people feel and think and how they evaluate an object, that information, on its own, is not always enough to consistently predict behavior. Over the years, researchers have found the relationship between attitudes and subsequent behavior to depend on a number of moderating variables, including norms, vested interest, perceived moral obligation, self monitoring, perceived behavioral control, and even past behavior.

The ability to predict behavior consistently as a function of attitude has long been the Holy Grail of attitude researchers. Early researchers such as Allport (1935) recognized an attitude-behavior consistency linkage, to the extent that the link itself was seen as an implicit part of the definition of attitude (Fazio, 1986).

By the 1960s and early 1970s, however, researchers were beginning to question the often weak correlations between attitudes and behavior. In 1969, Wicker conducted a review of 42 studies, all of which showed the correlation between attitude and behavior as at or below  $r = .30$ . This sparked a debate over the existence of any evidence to support the contention that attitude influences relevant behaviors. In subsequent studies, Bem (1972) argued that attitude was primarily a secondary influence on past behavior; Abelson (1982) questioned whether the attitude concept was even necessary as a plausible



explanation for behavior. In a 1971 study, Wicker himself advocated abandoning the concept entirely.

During the 1970s and early 1980s, the resulting debate over whether attitude could be said to predict behavior, and under what conditions and circumstances, stimulated a great deal of research aimed at attempting to trace the pattern, strength, and consistency of the attitude-behavior relationship. As a result, modern theoretical frameworks dating from this period are all derived, to a greater or lesser extent, from the belief that moderating variables can and should be employed to make attitudes a better and more consistent predictor of behavior.

### **Purpose and Objectives of the Study**

The purpose of this study is to examine the effect of moderating variables on the attitude-behavior relationship within the context of a specific new media adoption behavior--education at a distance.

Despite numerous predictions over the past several years that development of the Internet and the World Wide Web would revolutionize mediated instruction and create a new paradigm for teaching and learning, there is still a fair amount of controversy about the viability of technology-based distance learning environments. In the arena of higher education, where colleges and universities around the country are currently beginning to make available a wide variety of distance education course offerings utilizing new communications technologies such as video conferencing and the Internet, students' attitudes and acceptance of computerized teaching methods are still very much at issue. For example, recent articles in the Associated Press (1998a, 1998b) recount difficulties in the adjustment of students and faculty to high-tech learning environments. These

difficulties include students' concerns about lack of instructor-student interaction, faculty concerns about greater workloads and limited resources to develop such courses, and institutional disagreements about the desirability of offering more distance education courses.

For some students, the opportunity to take a technology-based distance education course may be attractive, perhaps, because it is a convenient and novel approach to the process of education. For others, however, beliefs about some of the potential drawbacks of distance education (or distance learning as it is sometimes called), such as the lack of structure provided by a live instructor, or lack of access to a computer, may negatively affect attitudes and intent to take a distance education course. Yet, although most of the field studies that have been done on student attitudes and behavior toward distance education report a preference for traditional "group" learning, studies also report an escalating level of student demand and participation for such courses (Simonson, 1997).

One way of looking at students' adoption of technology-based distance education is through the diffusion of innovations framework. New communications technologies, such as the Internet, the World Wide Web, and compressed video have made it possible to view technology-based distance education as a technological innovation in the "early adopter" phase of the classic innovation-adoption diffusion cycle (Rogers, 1995). Rogers felt that the domain of educational research represented a "potential exciting contribution" to diffusion theory, stemming from the fact that in education, organizations, not single individuals, serve as "change agents" involved in the adoption of educational innovations (p. 63).

According to diffusion theory, early adopters such as adult learners and former patrons of “correspondence school courses” looking to balance educational, professional, and personal priorities have been in the forefront of the distance education adoption cycle. If this educational innovation is to be successful long term, however, adult learners will be followed by more mainstream, traditional-aged students. These “early majority” adopters are currently being offered the choice of taking distance education courses by a growing number of traditional institutions of higher learning. Since they lack the personal and professional incentives of the early adopters, the motivations for these students to engage in this particular adoption behavior may be dramatically different from those of the traditional adult learner. The “if we build it, they will come” model of institutional development of distance education programs may hold little currency for this new and growing student market. Institutions of higher learning might find it unexpectedly difficult to fill seats in the virtual classrooms of tomorrow without a better understanding of how to motivate desired behavioral outcomes among this group.

On the other hand, from an institutional perspective, the decision to offer expanded distance education courses and programs is equally complex. Decision-making may stem from such issues as overcrowding and lack of interaction in large survey classes, to cost and difficulty of building new lecture halls and support facilities, to wanting to open up new marketing territories and compete with other schools on the basis of adding new programs tailored to students in suburban and rural markets.

Given the above, the study of adoption behavior as it relates to technology-based distance education is important, from the perspective that the success of distance education programs in higher education ultimately will be determined as a function of

whether or not students can be motivated to participate, as well as how positively or negatively they feel about their experience. Just as advertising is typically concerned with the formation of positive attitudes which in turn are presumed to drive behavior (Bacon, 1995), educators and institutions of higher learning need to be concerned with understanding how factors that impact student attitudes may or may not affect behavior if they are to be successful in constructing distance education courses that effectively reach and subsequently teach their students.

In this context, the strength of the attitude-behavior correlation as it relates to an adoption behavior such as technology-based distance education may be an under-examined issue. While studies have been conducted that compare distance education to traditional “live” classroom experience (Souder, 1993; Egan et al., 1991) and look at the effect of various components of teaching and learning styles (Schlosser & Anderson, 1994; Wilkes & Burnham, 1991; Mason & Kaye, 1989), very few deal directly with the domain of attitude-behavior relationships.

The limited research which has been done in this area seems to suggest that student attitudes and subsequent behavior may in fact be impacted more by components of the distance education experience than by generalized attitudes toward distance learning. For example, several studies of subjects who have actually taken distance education courses report more positive attitudes and behavioral outcomes than those studies focusing on more generalized student attitudes toward the concept itself (Jones, 1992; McElveen & Roberts, 1992). This may be due to the effect of experience and familiarity as moderating variables impacting students' attitudes toward the specific adoption behavior of participating in a distance education course.

Some researchers have argued that behavior is largely a function of an individual's perceptions of an event and its potential outcomes (Fazio, in Mitchell, 1993). One of the central problems related to students' adoption of distance education initiatives may be that students are being asked to engage in an adoption behavior for which they have little contextual experience with which to guide themselves. In many colleges and universities, only small percentages of students have actually participated in a distance education course; and of those who have (Associated Press, 1998a), there are no doubt some who hold negative attitudes related to lack of social interaction and unfamiliarity with the (often not very stable) technology being used. If the goal is to encourage students' acceptance of new communications technologies in distance education, then the attitude-behavior domain is an extremely useful framework in which to study the factors that influence the salience and consistency of students' attitudes and behavior.

Direct experience of technology-based distance education should serve to strengthen attitudes and enhance the consistency of the attitude-behavior relationship. Yet, in a domain where weakly held attitudes based on limited experience are the norm, behavior and intention to behave might be influenced by a variety of factors that could make predicting outcomes very difficult. In such a setting, attitudes could be very positive or very negative, yet, because they are weakly held, very susceptible to the influence of peers and the persuasively crafted arguments of others.

The ability to predict how students' attitudes and behavior are influenced by their experience and influences in their environment could make it easier to develop effective marketing strategies and message appeals that do, in fact, lead to the desired behavioral outcomes. This study will therefore attempt to answer the following questions:

- (1) how does experience influence the strength and consistency of the attitude-behavior relationship within the domain of technology-based distance education;
- (2) how do evaluatively oriented moderating factors, such as attitudes and normative influences, impact the target adoption behavior; and
- (3) how much of an impact does the influence of subjective norms have on attitudes and behavior for those students without direct experience of the target adoption behavior?

### **Relevance of the Study**

The traditional undergraduate university classroom, until recently one of the few places where face-to-face communication between instructor and student was seen as the desired norm, has been undergoing rapid transformation due to the impact of communication technologies, including compressed video and the Internet. In many universities, students now have the option of taking classes off-site, via sophisticated videoconferencing networks. In addition, online computer applications, both proprietary and Internet-based, have begun to augment and supplant some of the unique interactions that take place in the classroom between instructor and student. Through their ability to facilitate electronic one-to-one communication, Internet-based applications such as email, online chat, and bulletin board forums provide virtual linkages between instructor and student that can take place over physical distance and time. As a result, at many universities, syllabi, lecture notes, and other course materials are now routinely available online, even in courses taught entirely face-to-face. Many instructors in full-blown distance education courses never see their students, except electronically, instead making

use of computer and video-based instruction to communicate beyond the walls of the classroom (Associated Press, 1998a).

As various forms of teaching with technology, from full-blown distance education using telecommunications and asynchronous, computer-based learning to in-class use of computers and interactive technology, become more common at the university level, questions related to the adoption cycle of distance education, as well as the effect of the experience of such technology on student attitudes and behavior become increasingly more important. If attitudes do indeed drive behavior, including early adoption behaviors, it is important to understand under which conditions and settings the relationship holds true, as well as what factors pertinent to the domain of distance education moderate the strength and consistency of the attitude-behavior relationship. For example, if direct experience were to prove to be the best indicator of attitude-behavior correspondence in the case of technology-based distance education, this could significantly affect institutional decisions as to strategic allocation of resources and marketing expenditures. This would not necessarily bode well for universities contemplating expanding distance education programs to include courses designed to be taken by traditional-age, campus-based students who generally lack any relevant direct experience with distance education.

On the other hand, if promotional messages that draw on the influence and opinions of relevant peers can be shown to have an effect on attitude toward the adoption behavior, it would suggest that institutions might be able to use mass media-oriented consumer marketing strategies to promote their expanding distance efforts. Further, it would seem to suggest that student attitudes are a critical determinant factor in the success or failure of a distance education program and that the attitudes of students who

have yet to take a distance education course might be equally as important to measure as the attitudes of those who have.

### **Organization**

The introductory chapter provided background as to the problem to be investigated, the domain from which the theoretical constructs were drawn and the purpose and relevance of the study. The second chapter of this dissertation examines the literature in the fields under study. This includes the literature on diffusion of innovations, attitudes and distance education, theories regarding the correspondence in attitude-behavior relationships, and the effect of moderating variables on the attitude-behavior relationship. Chapter 3 provides a comprehensive overview of the methodology used in the proposed study, including the hypotheses and independent and dependent variables under study, pretesting of scales and stimulus, description and identification of participants, procedure and scale item development, as well as the statistical analyses which were employed. Chapter 4 reports the findings of the data analyses conducted to test the hypotheses, as well as the findings of the post hoc analyses. Chapter 5 includes the limitations, discussion and general conclusion sections of the dissertation. Appendix A includes a copy of the stimulus materials; Appendix B defines and describes the moderating variables in the study; and Appendix C appends a copy of the questionnaire instrument, followed by a list of cited references.



## CHAPTER 2 LITERATURE REVIEW

### **Overview**

The literature review draws on three main streams of research. These include the diffusion of innovations framework, which deals with the rate of adoption of a new technological innovation or practice; the behavior and behavioral intent prediction models, which look at attitude as an antecedent variable; and finally, the work of researchers who have sought to examine those variables, such as direct experience, attitude strength and attitude certainty, which impact and influence attitude and the attitude to behavior correspondence.

### **Diffusion of Innovations and Adoption Behavior**

From a theoretical standpoint, adoption behavior, commonly thought of as how early or late in a diffusion cycle one adopts a new product, idea or innovation, is a construct developed from Rogers and Shoemaker's diffusion of innovations framework. In their original conceptualization, Rogers and Shoemaker defined adoption behavior as the relationship between the time at which an individual chooses to adopt a technological innovation and the time at which other members of his/her social system do so (Rogers & Shoemaker, 1971).

The early diffusion researchers were successful in developing a typology which served to categorize which people become early adopters, i.e., the first to adopt a new product or innovation, as opposed to early majority and late adopters, those who engage

in the adoption behavior only after prevalence of the behavior has reached critical mass, or, as in the case of late adopters, after the innovation is well established and commonly practiced.

Diffusion theory proved to be phenomenally successful in categorizing certain types of adoption behavior related to innovations. Rogers himself argued that "no other field of behavior science research represents more effort by more scholars in more discipline in more nations" (Rogers, 1995, p. xv).

According to Rogers, education ranks fourth among the major diffusion traditions in terms of the number of studies. Early education diffusion studies were almost all completed at one institution, Columbia University's Teachers' College, under the direction of Dr. Paul Mort. These studies focused on whether local control over school financial decisions led to school innovativeness (Mort, 1953). Many of the subsequent studies in the educational domain have dealt with the rate of adoption of innovative learning environments and approaches, including diffusion of kindergarten (Mort, 1953); driver training (Allen, 1956); and modern math (Carlson, 1965).

In addition to the thousands of studies based on the adoption cycle typology, diffusion theory is also useful in its attempts to account for inconsistencies in the adopters' attitudes and behaviors. For example, what causes certain subjects to be early adopters of one behavior, and not another? Rogers described the usual process of implementing an innovation as being comprised of knowledge; persuasion; decision-making; implementation, and confirmation. But he also argued that prior attitudes toward an innovation frequently intervened between knowledge and decision (attitude and behavior), and that there are instances where attitudes and actions are not consistent.

In a set of studies conducted of contraception in Third World Nations, Rogers observed that although the majority of respondents claimed they had knowledge of family planning methods, only 15 to 20 percent reported actually engaging in the behavior (Rogers, 1973). In some cases, even the actual sequence of stages could vary, such as when the influence of norms and group pressure lead to a collective innovation decision. In studies of women's contraceptive adoption in Korea and mainland China, the researchers found that the adoption process was influenced by normative pressures to the extent that the observed sequence appeared to be knowledge-decision-persuasion for these groups (Rogers & Kincaid, 1981).

Diffusionists call this discrepancy the "KAP Gap" (for knowledge-attitude-practice), and have ascribed these gaps to the effect of moderating variables such as beliefs, communication channels and personality traits. For example, Coleman et al., (1966) concluded that although initial knowledge about a new medical drug occurred mainly through communication channel messages, at later stages in the adoption process doctors became active information seekers, usually relying on their peers in information networks. Hassinger (1959) drew on the concepts of selective exposure and selective perception in arguing that most individuals will seldom expose themselves to messages about an innovation and that even if they are exposed, such messages will have little effectiveness unless the innovation is perceived as being relevant and consistent with the individual's attitudes and beliefs.

Diffusion researchers have also looked at individual differences that might influence adoption behavior. Researchers such as Midgley and Dowling (1978) re-conceptualized the adoption of behavior construct as less a measure of the time it takes to

move from awareness to adoption than a personality construct which an individual could possess to a greater or lesser degree. Other researchers have posited a relationship between such variables as novelty seeking (Flavell, Miller, & Miller, 1977) and creativity, especially productive thinking and problem solving (Welsh, 1975 and Guilford, 1965) and the adoption behavior process.

Rogers (1973) felt that the persuasion-adoption discrepancy, or "gap" for some innovations, could be closed by a "cue-to-action," an event or experience occurring at a certain time that crystallizes attitude formation and leads to overt behavior. He also felt that, in addition to individual differences and discrepancies between adoption and persuasion, diffusion of an innovation may not always be univariate and unchanging. Very often, innovations go through a process of reinvention in which the innovation is changed or modified by a user in the process of its adoption and implementation (Charters & Pellegrin, 1972). For example, in a national survey of school adoption educational innovations, Emrick (1977) found that 56 percent of adopters implemented only selected aspects of innovations; in 20 percent of adoptions, significant re-invention occurred.

### **Student Attitudes and Distance Education**

The growing interest in distance education as a technological innovation that might be subject to the adoption behavior cycle stems, in part, from a feeling that the educational needs of some prospective college students can't be met within the highly interpersonal, cost-intensive model of higher education (Hiltz, 1988). However, although individual preference for face-to-face communication in social interactions is a significant factor in the live classroom, there are no doubt times when mediated instruction may

actually be more effective, particularly for adult learners whose limited free time and physical/geographical limitations may cause them to prefer a learning-at-a-distance model. Even for traditional age students, distance education could provide certain advantages, both in terms of being able to access convenient and self-paced learning, as well as in becoming more familiar and comfortable with computer technologies.

Current research on student attitudes toward distance learning has tended to focus on both general and specific attitudes toward the concept of distance education, as well as attitudes toward specific aspects of the target behaviors associated with taking this type of course. Studies of general attitudes toward technology and its use in teaching and learning have reported, on balance, generally positive student attitudes toward their experiences (Simmons, 1991; Nadel, 1988), as well as subjects' perceptions of "no intrinsic difference" between traditional and mediated forms of instruction (Hackman & Walker, 1990, p. 198).

On the other hand, studies conducted on specific aspects of student experience, such as performance and satisfaction with the course they have taken, have generated a more varied set of attitudes and perceptions. A large number of attitudinal studies in the area of distance learning have focused on how learning style (as well as teaching style) influence differences in perception and attitudes (see Miller, 1997; Hammond, 1997; Hackman & Walker, 1990). Other studies have focused on student reactions to the distance learning experience, such as Saunder et. al. (1997), which examined students' coping strategies, as well as perceived stressors and benefits. In this same context, Simonson et al. (1989), and Bland, Morrison, and Ross (1992) have conducted studies which reported on student reactions to various teaching strategies used in a distance

education environment. Most of these studies have concluded that students generally find distance education more stressful, in terms of the perceived lack of interaction, the unfamiliarity of the experience, and the increased need for self motivation. Students rate as successful those teaching strategies that attempt to compensate for these perceived limitations. Finally, a number of studies have focused on student attitudes toward the technology currently used in distance education courses. In a study of the attitudes of teacher education students, Huang et al. (1995) found demographics such as age, gender and computer familiarity/usage influenced attitude toward educational computing. Barron (1987) found that students' degree of familiarity with technology affected their attitude toward use of technology in the classroom to the extent that students with little familiarity exhibited negative attitudes and some reluctance to participate in the distance learning experience.

### **The Attitude-Behavior Relationship**

The most important and influential of the modern frameworks that attempted to capture the effect of attitude on behavior is undoubtedly Fishbein and Ajzen's (1974, 1975) Theory of Reasoned Action (TORA). The conceptual foundation of Fishbein and Ajzen's work was based on the insight that behavioral intention was a strong predictor of actual behavior. This led Fishbein and Ajzen to develop their theoretical model as an attempt to predict behavior on the basis of behavioral intention. In the resulting model, they defined behavioral intention as a respondent's intention to behave, itself a function of attitudes toward the behavior under study and subjective norms for the behavior.

In the TORA model, attitudes are a function of beliefs about and assessments of perceived consequences of acting in a certain way. Subjective norms refer to an

individual's interpretation of what important referents think about the desirability of a behavior, combined with the individual's desire and motivation to comply. Behavioral intention, therefore, is a function of the combination of attitudes and subjective norms, which are themselves a function of the weighting of antecedent variables (beliefs and evaluation of their outcomes in the case of attitudes, and norms and motivation to comply in the case of subjective norms). The resulting predictive equation can be written as follows:

$$BI = w_1AB + w_2SN$$

where *BI* is behavioral intent, *AB* is attitude toward the behavior, and *SN* is subjective norms. In the model, these variables are weighted (*w*) as follows:

*AB* - variables related to belief statements and evaluation of their consequences;

*SN* - variables related to normative beliefs of important referents and their effect on a subject's motivation to comply.

In the TORA model, the strongest factor predicting behavior is behavioral intent. If we intend to engage in an act, we are very likely to follow through with the behavior. There are some factors that do influence behavioral intent, however, such as past behavior (Bagozzi, 1981; Bentler & Speckart, 1979, 1981) and prior learning or habit (Triandis, 1977, 1980).

Fishbein and Azjen recognized that factors such as individual difference variables might have some influence upon the TORA model, but their general viewpoint was that the model in itself could account for most aspects of the process, provided the target

behavior in question was relatively simple, uncomplicated, corresponded in terms of action, target, context and time and was volitional in nature (Fishbein & Ajzen, 1977).

Indeed, an attitude will not do a very good job of predicting behavior if the correspondence between action, target, context and time differ. For example, Davidson and Jaccard (1975) used the TORA to conduct a study of women's attitudes and behaviors toward family planning. They found a greater correspondence between attitude and behavior for those women who had correspondence in terms of their situation (mothers thinking about a specific form of family planning within the next five years) vs. women who had a more generalized context and longer time frame (20 years).

Another factor that could affect the predictive power of the model was what Fishbein and Ajzen termed the "principle of correspondence" (1980). The correspondence principle concept argues that specificity of attitude and corresponding behavior should ideally match; general attitudes are better at predicting general classes of behavior and specific attitudes are more useful in predicting specific behaviors. The researchers also differentiated between attitude toward a behavior (highly specific) and attitude toward an object (more broadly based).

One of the reasons that the attitude-behavior relationship is so central to the study of attitude is that behavior can be used as an indicator of attitude. This has led researchers to develop behavioral measures from which they can infer attitudes. Single behavioral acts are seldom powerful enough to infer corresponding attitudes. As a result, Fishbein and Ajzen (1974, 1975) advocated a multiple act criterion for behavior, which could be based on several behavior items, both single act and repeated observation. Weigel and Newman (1976) used a multiple act criterion for behavior in their study of



behaviors with respect to environmental protection. Triandis and Triandis (1965) developed a scale of social distance that used a sequence differential technique—it consisted of a series of items moving along a continuum of social distance from “I would marry this person” to “I would participate in the lynching of this person.” Triandis used a nine point behavioral index and scales based on “I would /would not engage in \_\_\_\_\_ behavior” to predict indications of engaging in a behavior with a source.

Crano (1983) in his studies of the influence of vested interest on attitude strength developed a similar behavioral index. In a study in which college students were told that there would be a new senior comprehensive exam for all seniors, students were invited to actively work against this measure on the basis of a behavioral index of items including signing a petition, volunteering to actively work against the measure, and joining a group to work against the measure. In an earlier 1982 study (with Sivacek), of vested interest and under age drinking laws, Crano found that those students with vested interest (under age 21) had the strongest attitudes and attitude behavioral correlations when measured on the basis of a similar behavioral index.

The notion that non-attitudinal variables could moderate the strength of the correlation between attitude and behavior stimulated much interest, and led to the TORA’s (and its extension, the Theory of Planned Behavior, or TOPB) extensive use as a testing framework in a variety of settings and circumstances.

As an outgrowth of the interest and attention focused on the TORA, subsequent researchers were motivated to discover if other variables could be added to the framework, in an attempt to produce a better model fit with respect to classes of specific and general behaviors. For example, Warshaw, Sheppard, and Hartwick (1982) modeled

their theory of goal pursuit on the TORA, substituting “trying” and “intention to try” for behavior and behavioral intentions and breaking attitudes down into three antecedents (attitude toward successful attainment, weighted by perceived likelihood of success; attitude toward unsuccessful attainment, weighted by perceived likelihood of failure; and beliefs and evaluations of belief outcomes).

Bentler and Speckart (1979, 1981) developed their model of past behavior through a structural equation analysis which indicated that past behavior, such as habits, might evoke a learned predisposition which would make possible a direct link from past to future behavior. In addition, the researchers postulated a direct link from attitudes to behaviors when attitudes were not considered prior to behavior. (See Figure 2-1.)

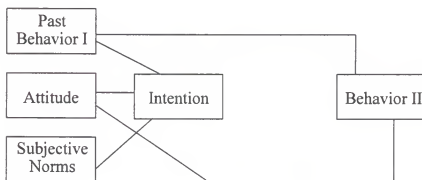


Figure 2-1. Bentler-Speckart Model of Past Behavior

Bentler and Speckart based their original framework on a study of drug consumption, which, it could be argued, is a target behavior not entirely under the subjects' control. This is one of the major critiques also made of the TORA. Fishbein and Ajzen themselves indicated that the TORA framework is designed to work best when

there is congruence between the general/specific nature of the attitude-behavior measures under study, and when the behavior represents simple acts under the subject's volitional control (Ajzen, 1991).

Behavior that is based on a complex sequence of actions often requires subjects to work through an effort to coordinate resources, cooperation and skills while making progress toward some goal. In an attempt to answer critics of the TORA, who argued that most behaviors are neither volitional (as in the initial model formulation) nor involitional, Ajzen (1991) added an additional variable called "perceived behavioral control," which measures perceptions of individual control over the target behavior. The resulting predictive equation can be written as follows:

$$B \gg BI \gg (AB + SN + PBC) = w_1 AB + w_2 SN + w_3 PBC$$

In the model, *PBC* is the degree of perceived behavioral control a subject feels over the behavior. The *PBC* variable is weighted as follows:

*PBC* - variables related to beliefs about the control a subject has over the behavior and the power or degree of control.

Recognizing that all behavior is not completely under one's volitional control, Ajzen (1991) postulated that intent to perform some behavior is a function of the amount of control one has over the behavior in question as well as belief in one's ability to perform it. Perceived behavioral control (PBC) therefore, was, in Ajzen's framework, a moderating variable that influenced intent but could also under certain circumstances directly impact behavior. Ajzen defined PBC as a combination of one's perception of the ease or difficulty of performing a behavior (akin to self-efficacy) and control beliefs,

beliefs that focus on the likelihood that one possesses the resources and opportunities necessary to perform a behavior. (See Figure 2-2.)

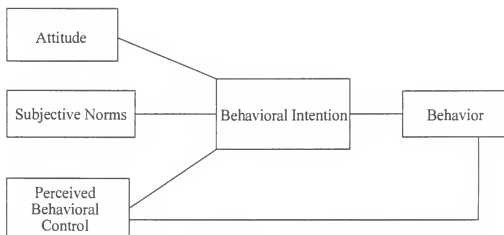


Figure 2-2. Theory of Planned Behavior

In a comparison of the TORA and the Theory of Planned Behavior (TOPB), Madden, Ellen, and Ajzen (1992) examined 10 behaviors that exhibited a range in level of control from low to high. After combining the behaviors into three categories to increase the stability of the prediction, Madden et al. (1992) found that PBC significantly predicted intentions for all categories and predicted behavior only for the category containing the three behaviors lowest in PBC (sleeping, shopping and exercising).

In a similar study comparing the TORA and the TOPB (Bagozzi & Kimmel, 1995), the researchers found that the TOPB significantly predicted intentions with respect to exercising and dieting behaviors, behaviors assumed to be influenced at least somewhat by an individual's perceptions of the degree of efficacy and control he or she

might possess over the target behavior. The TOPB predicted these intentions significantly better than the TORA for these behaviors.

In a recent study of exercise behaviors, Terry and O'Leary (1995) compared the effects of perceived behavioral control and a measure of self efficacy based on Bandura's (1994) social learning model. Results indicated that separate measures of self-efficacy and perceived behavioral control were empirically distinguishable and their effects differed in terms of behavioral intentions and behavior. On the basis of these results, the researchers argued for incorporation of both measures into a revised TOPB model.

The TOPB is a heuristically provocative framework, and one which has led to many additional studies focused on attempting to understand the nature of the relationships of the model variables in a variety of different domains. In the field of education, recent TOPB studies include Prislin and Kovarlija (1992), who found in a study of low and high self-monitoring that students' intentions to attend a class lecture were best predicted by attitude for the low and subjective norms for the high self-monitoring groups. Crawley and Black (1992) used the model to test causal linkages between attitudes, subjective norms and perceived behavioral control with respect to secondary science students' intentions to enroll in physics classes. The model has also been used to predict intention of tenth graders to enroll in subsequent mathematics courses (Choe, 1992) as well as to predict success in an undergraduate computer science course (Shaffer, 1990).

As in these studies, one of the most interesting aspects of the TOPB is in understanding how PBC, attitude and subjective norms interact with each other in a given situation. It is certainly possible for people to feel a high degree of control over their behavior, yet have negative evaluations of the outcome of engaging in that behavior. This

could lead to attitude-behavior inconsistency and resulting difficulty in ascertaining how a subject might perform. For example, while it might look to an outsider as if a subject has efficacy issues, the subject's behavior, could, in fact, be based on negative evaluations due to information representing some aspect of experience or influence possessed by the subject under study.

In the specific context of distance education, where studies have shown a high correlation between attitude toward technology and student familiarity (Barron, 1987; Smith & McNelis, 1993), as well as a correlation between familiarity with technology and reduction in anxiety (Jones, 1992; Riddle, 1990), one might expect the predictive value of efficacy toward behaviors supporting distance education to be somewhat moderated by strong attitudes.

Along these same lines, subjective norms also might interact with attitude. In a previous pilot study of individual differences and how they relate to attitude and subsequent behavior toward taking a distance education course (Irani & O'Malley, 1998), attitude proved to be the strongest predictor of behavioral intent, followed by subjective norms and then perceived behavioral control. As an inference from these results, the researchers suggested then that intent to take a distance education course may be a behavior perceived to be, to a great extent, under one's own control and not subject to significant influence by peers, advisors, relatives and other referents. However, for those students who have not yet adopted the technology represented by the target behavior, it may be the case that their attitudes could be more strongly impacted by the opinions of relevant normative influences. Manipulating subjects' perceptions of the evaluations normative referents might make about behaviors related to distance education might

therefore increase the significance of subjective norms and serve as the basis for an interaction with attitudes.

Studies also have shown that the attitudes of people who have had direct experience with the attitude object were moderately related to subsequent attitude-relevant behaviors, whereas attitudes of people without direct experience had slight or no relationship (Regan & Fazio, 1977). In some of Fazio and Zanna's early work (1978a, 1978b) he collaborated with Zanna in a series of studies of attitude accessibility and direct experience involving subjects' exposure to a series of puzzles. The researchers manipulated direct experience by giving a group of subjects prior exposure and opportunity to experience the stimulus. Fazio and Zanna found that these subjects had stronger and more accessible attitudes, and a correspondingly more consistent attitude-behavior correlation toward the attitude object than did the control group. As an adjunct to this hypothesis, in their 1978 studies, the researchers contended that what they defined as "attitude qualities," such as confidence, clarity and certainty, could also moderate the attitude-behavior correspondence. Fazio and Zanna (1981) later developed this idea into an operationalization of attitude strength, which was based on the hypothesis that stronger attitudes would correlate more strongly with behavior than weak ones.

Fazio evolved this reasoning further with the development of the concept of attitude accessibility. In 1982, for example, he conducted a study (Fazio, Chen, McDonel, & Sherman, 1982) in which subjects again played with puzzles but were given the opportunity to make attitudinal evaluations at three different levels, corresponding to increased repeated responses. The subjects who had been in the experimental condition where they were able to express their attitudes most frequently had the highest attitude-

behavior correlations, which Fazio attributed to the experimental groups' ability to more easily access their attitudes on the basis of their repeated expression of attitude.

In 1984, Fazio and Powell conducted a study, the first of many, in which they developed a measure of accessibility by using an attitude-object evaluative word prime. Subjects were exposed to an object (for example, vodka) and then were asked to hit a button indicating one of two evaluative responses (good/bad). This enabled the researchers to measure the response latency, that is, the time between exposure and the object evaluation. The shorter the response latency, the more accessible the attitude. In Fazio's view, the degree of attitude automaticity was an indicator of the strength of the corresponding attitude and its subsequent correlation to behavior.

Fazio's process model was based on the concept of attitudes being activated upon exposure to an attitude object. This activation led to selective perception, in which the subject evaluated the attitude object on the basis of any preexisting attitudes, then immediate perception, in which the subject considers new information based on exposure. Immediate perception led to a definition of the event that would then develop into behavior. Sometimes, however, the attitude object was not the only factor in the process. Fazio acknowledged the impact of norms in some situations, arguing that norms for an event or behavior could lead to a definition of the situation that would then factor into behavior along with definition of the event.

Fazio's (1986) model (see Figure 3-3) was designed to help understand the formation of consistent attitudes and behavior. As such, it took a different approach from both the TORA and the TOPB, focusing instead on accessibility and automaticity of attitudes. In Fazio's view, attitudes were often automatically (without conscious thought)



activated on a subject's being confronted with an attitude object. Through a process of selective perception, combined with the immediate perception of the attitude object, the subject developed a definition of the event, itself modified by both norms and a definition of the situation or context for the behavior. According to Fazio, definition led directly to the behavior, "simply following" from perceptions without any necessary conscious thought (Fazio, 1986, p. 237).

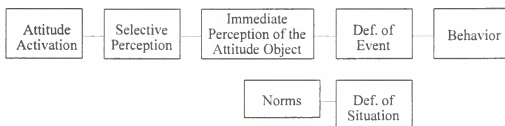


Fig. 2-3. Fazio's Process Model of Attitude-Behavior Relationship

In his process model, Fazio contended that variables such as direct experience strengthen the attitude-behavior correlation because they are more accessible, i.e., more easily called up from the subject's memory upon contact with the attitude object. From Fazio's perspective, attitudes can be activated upon exposure to an attitude object, either called up from memory or automatically activated upon exposure. Attitudes can therefore have a greater or lesser degree of accessibility. Fazio held that the more accessible an attitude, the stronger it would be, and the stronger and more consistent the relationship between attitude and subsequent behavior.

From this perspective, attitudes have several characteristics that are important in terms of understanding their potential effects and influences on variables such as

behavior. Attitudes can vary along a continuum with some degree of valence or direction; they can be positive or negative, favorable or unfavorable. Attitudes can be analyzed in terms of their polarity or extremity, their strength and their accessibility and automaticity (Fazio, 1986). For example, in terms of Fazio's process model of attitude and its effect on behavior, attitude accessibility and attitude strength are important indicators of the strength of the attitude-behavior relationship. From Fazio's perspective, stronger attitudes are attitudes that are more accessible, that are more easily and more readily activated from memory, and that lead to more consistent attitude-behavior correlation. Stronger attitudes, in this view, are more durable, more resistant to change, and have a tendency to manifest themselves in behavior.

To develop an index of accessibility, Fazio used two measures: speed with which attitudes are accessed, called "response latency"; and repeated expression of attitudes. In several studies, Fazio and his colleagues manipulated accessibility by measuring how quickly respondents formed attitudes, or by manipulating the stimulus so that contact with it (and hence attitude activation) would be more likely than for a control stimulus.

In his subsequent research, including a well-known study which gauged subjects' attitudes toward voting in the 1984 presidential election (Fazio & Williams, 1986), Fazio operationalized repeated expression of attitudes by having subjects repeatedly (usually up to five times) express their attitudes. The theory behind this manipulation may have been derived from the associated learning model, which views attitude as an association between an attitude object and its evaluation.

Critics of Fazio (Eagly & Chaiken, 1995) have contested his operationalizations, arguing that manipulations of accessibility and repeated expression may operate at least

partially on the basis of the attitude's strength, stability, or degree of extremity. Weak attitude-object associations, for example, may in fact be moderated by attitude strength in addition to their accessibility. Looked at in this way, indirect experience may predict behavior less well than direct experience because subjects with indirect experience hold attitudes that are less stable. When they encounter the attitude object directly, their attitude is therefore subject to change. In the case of repeated expression, repetition may affect accessibility of one's beliefs, not attitudes, which may cause beliefs to become more evaluatively consistent with attitudes (Tesser, 1978).

Finally, knowledge may help to stabilize attitudes. Fazio and Zanna (1978) argued that prior knowledge could make attitudes more accessible, and increase the congruence between *A* and *B*. In a study based on this concept, Kallgren and Wood (1986) assessed subjects' prior knowledge through asking them to recall and write down all of their beliefs and experiences, and then subsequently asked subjects to perform a behavior (signing a petition). Subjects with more prior beliefs and behaviors behaved more consistently with their attitudes. Within the context of technology-based distance education, subjects with direct experience, as a student or even as an observer, would presumably hold stronger attitudes, based on their ability to generate more beliefs and past behaviors related to their experience. These attitudes would be less likely to be influenced by moderating variables such as subjective norms or perceived behavioral control, so the attitude to behavior correlation would likely be stronger than for those with indirect experience only.

### Media/Message Effects

One specific avenue through which subjects gain knowledge about an attitude object even though they may lack direct experience is through a media message. Media effect researchers focus on examining how the elements of the message or the medium through which it is delivered affect receivers (Rubin, 1986). Although media effects are not the focus of this study, several aspects related to how message elements affect attitudes are worth noting.

Messages, whether interpersonal or mass media generated, may affect attitudes in a number of ways. Mere exposure effects, which can be related to Fazio's concept of attitude automaticity and repeated expression of attitudes, may cause subjects who are exposed to a message to be able to access their attitudes more easily, which would contribute to attitude strength and stability. Cognitive responses to elements contained in the message stimuli may affect attitudes as well. For example, working within the Fishbein-Ajzen framework, Lutz (1994) added to the TORA model by extending it to include an attitude toward the ad ( $A_{ad}$ ) construct, an attempt to extend the TORA to explain how cognitive responses to advertising message stimuli can change attitudes, which in turn, can affect behavioral intentions. In this framework,  $A_{ad}$  serves as an antecedent to brand attitude. Lutz conceptualized  $A_{ad}$  as a multi-attribute model, comprised of a number of antecedent variables relating to the message content and execution, as well as perceptions about the advertiser, and the advertising itself.

Consumer behaviorists also look at how medium and message can affect attitude. In a study of brand communication styles on the Internet vs. established media, Philport and Arbittier (1997) concluded that each medium has an effect on its advertising content.

The print medium's superiority in displaying text and relatively unlimited message duration make it a good information carrier, while broadcast's fixed exposure duration, contrasted with immediacy and intensity of exposure, make it effective at conveying messages geared toward emotional and psychological appeals. The characteristics of each medium, in this view, add meaning and shape to the content they deliver. The associations conveyed by the medium and its message elements, when used effectively, convey desirable values to consumers.

In a study of traditional media, King, Reid, Tinkham, & Pekrywczynski. (1989) expanded on this idea by suggesting that the use of a "well-chosen visual metaphor" might provide a symbolic association that conveys desirable values that become associated with a brand in the consumer's mind.

In summary, the literature seems to suggest three main assumptions upon which the study was based. First, direct experience of a behavior should serve to strengthen attitudes and the consistency of the attitude-behavior relationship, perhaps through impacting attitude strength, certainty, and accessibility. Secondly, subjects without experience should tend to hold more weakly held attitudes toward the target adoption behavior of taking and supporting distance education courses. And finally, the more weakly held attitudes of subjects without direct experience therefore might be more susceptible to external influences such as subjective norms, which are based on the degree of influence a subject ascribes to what relevant referents might think.

## CHAPTER 3 METHODOLOGY

### Overview

The present study will attempt to build on the already well-developed foundation of theory regarding attitude-behavior relationships in three important ways:

- (1) the study will explore the ability of direct experience to predict behavior in the context of distance education, as well as its importance as a moderating variable in the TOPB framework;
- (2) the study will assess to what degree experience exerts an influence on attitudes, subjective norms and perceived behavioral control with respect to the target adoption behavior; and
- (3) the study will examine the effect of manipulating the salience of subjective norms for those subjects with direct experience (and hypothetically more strongly held attitudes) and indirect experience (more weakly held attitudes) of the target adoption behavior.

### Hypotheses

Based on the literature and the objectives, goals and relevance of the study, the following hypotheses were generated:

- H1: For those subjects who receive a direct experience treatment, the correlation between attitude and behavior toward technology-based distance education will increase in strength.

- H2: The attitude-behavior correlation will be stronger for those subjects in the direct experience condition than for subjects who have only indirect experience of the target adoption behavior.
- H3: For those subjects exposed to a stimulus that contains subjective norms information that is designed to be either positive, negative or, in the case of the control group, neutral information (subsequently referred to as “subjective norms feedback”), there should be a three-way interaction between experience treatment condition, time (measurement of variables before and after treatment administration, subsequently referred to as “T1” and “T2”), and the stimulus such that:
- H4: For those subjects with indirect experience, exposure to positive subjective norms feedback will *increase* their likelihood of engaging in the target adoption behavior.
- H5: For those subjects with indirect experience, exposure to negative subjective norms feedback will *decrease* their likelihood of engaging in the target adoption behavior.
- H6: In attempting to fit a model based on the TOPB framework which is used to predict the contribution effects of attitude, subjective norms and perceived behavioral control on behavioral intent and behavior, regression coefficients will support the following:
- a) for those subjects with direct experience, attitudes will be the strongest predictor variable of behavioral intent;

- b) for those subjects with indirect experience, subjective norms and perceived behavioral control will be the strongest predictors.

### **Subjects**

To test the hypotheses in this study, subjects were drawn from a sample population of college students enrolled in a university which has a limited number of distance education programs and courses available at the undergraduate and graduate level.

A sample population consisting of 250 undergraduates were randomly assigned to one of two treatment conditions related to experience of technology-based distance education as follows:

- a) half the sample received a distance education version of the course they were taking, using the same instructor and content, but delivered via videotape and the Internet;
- b) the other half of the sample also received the same instructor and content, but stayed in traditional live classroom delivery.

In addition to the experience treatment condition, subjects were also randomly assigned to be exposed to a stimulus consisting of subjective norms feedback that was either positive, negative, or neutral in nature.

### **Research Design**

The study was a mixed model repeated measures design that consisted of experience (two levels), time (two levels, before and after treatment), and subjective norms feedback (three levels). As a mixed model, the design included the between subjects factors of experience and the feedback, as well as the within subjects factor of



time. The design was analyzed as a repeated measures design because it involved measuring subjects on a factor(s) at different times, in this case at T1 and T2.

The repeated measure design is used primarily in the behavioral and social sciences where examining the affect of administering different levels of a treatment (such as type or dosage of drug) is a key issue. In this type of design, time becomes a factor in itself. A repeated measures design involving subjects being administered different dosages of a drug at T1, T2 T3 and so on would be a within subjects only design, since the drug factor is being administered to all subjects in sequence, hence “within” subjects. On the other hand, it is also possible to construct a repeated measures design with one or more between subjects factors, such as in the current study.

The present study examined the effect of experience (direct and indirect) and a stimulus at three levels (positive, negative and control) at T1 and T2 as between subject factors on the within subject factor of time, denoting two different measurements of the dependent variable of behavior toward distance education. In drug experiments, this is also known as a “controlled trial,” in that the experimenter administers the treatment (s) to both experimental and control groups. In drug research, the control stimulus is often a placebo, which is administered to some subjects who have been randomly assigned to this condition while others get one or more experimental levels of a drug or drugs (Robson, 1995).

The advantages of a repeated measures design are as follows:

1. *Statistical power.* In a repeated measures design, subjects serve as their own control, since they are administered the treatments at T1, T2, etc. In a between subjects design, to compare two levels of a

treatment on ten subjects, one would need to split the sample and randomly assign subjects, thus dropping the number of subjects who would experience each condition in half, to five. In a repeated measures design one could take all ten subjects and administer both levels, one at T1 and the other at T2. It is therefore possible to use fewer subjects to achieve the same statistical power, which is one reason why this design is often used in social and health sciences research, as it is sometimes difficult or expensive to find enough subjects who might have a certain disease or health condition to fill all the cells of a design. Sample size is an important issue for every experimenter, since sample size affects  $\beta$  and the probability of Type II error. Since Type II error deals with the true differences among means (Type II error is the possibility of failing to reject the null when it is in fact false) increasing the sample size reduces the probability of Type II error, which is a very good thing for the design (Ott, 1993). . This proved to be important to the present study, in which the high degree of participation required and the controversial subject matter lead to high levels of attrition in the sample population.

2. *Potentially less masking of main effects.* In a within subjects design, or in a mixed model when looking at the within subjects factors, between subjects variation is not at issue the way it would be in a between subjects design, such as a  $2 \times 2$  factorial. This type

of variance can sometimes mask main effects, which would not be the case with a repeated measures design. In a between subjects design, in which half of subjects received a treatment and half did not, and then all were questioned post-test as to behavioral intent and behavior, main effects might not therefore show up as a result of the analyses. In a repeated measures design, where the researcher is looking for a measurable difference between T1 and T2, main effects are more detectable.

3. *Efficiency for certain types of variables.* Some variables lend themselves, in an applied sense, to a repeated measures design, such as drug or clinical trials, as mentioned, and, one could argue, educational innovations such as distance education. Distance education is an educational innovation about which many more subjects might have knowledge and even been exposed to persuasive arguments and opinion than have actually experienced it, which is not at all dissimilar from asking subjects to access attitudes about distance education at T1, before they have had any experience with it, and then again at T2 when some subjects have had experience and some have not.

For all of its strengths in terms of efficiency, cost effectiveness and statistical power, the repeated measures design has several weaknesses, which must be carefully accounted for by the experimenter in order to achieve a sound experiment and a good statistical and theoretical outcome. They are as follows:

1. *Correlations between subjects' T1 and T2 responses.* A repeated measures design is not truly independent, in the same way which is a criteria for an ANOVA (multivariate normality and homogeneity of covariates are the other criterion). In a repeated measures design, there is an expectation that subjects' responses at T1 and T2 will be correlated, sometimes strongly. This can affect the integrity of the overall design, something that the experimenter needs to be aware of in analyzing the results and choosing the correct statistical analysis technique.
2. *Threats to internal validity.* Even with no between subjects factors, there will be differences among individuals in a group, which will then be correlated to their responses at T2. Further, one is taking more measurements from a smaller sample pool of subjects. Internal validity issues such as history, regression to the mean, testing and instrumentation can be magnified in a repeated measures design.
3. *Practice and Order Effects.* Because the experimental manipulation involves taking measurements at T1 and T2, it is possible for subjects to experience practice or testing effects, in which subjects would have already been administered, as in this study, the questionnaire at T1 when they received it again at T2. This could lead to some subjects answering differently than they might have, or perhaps changing an answer at T2, on the basis of thinking about it in terms of their experience at T1.

Order effects, in which subjects' responses are a function of receiving the treatment level manipulations in a certain sequence or order, can also be a problem. In

such a case, it might be that subjects were responding to the order, and not the stimulus itself. If all subjects received the stimulus at the same time, before being asked to access and report attitudes and beliefs toward the target behavior, it would be difficult to tell if they would have answered in the same way if they had been asked to elicit attitudes and beliefs about the target behavior before being exposed to the stimulus.

4. *Recall effects from previous time measurements.* If the time differential between T1 and T2 is too close together, subjects may recall their previous experience and may be responding to the T2 questionnaire as a function of what they remembered of T1. This is another source of potential threat to internal validity. Subjects may be more or less interested in, and responsive toward the stimulus at T2, for example, because they remembered it from T1; their responses to items may have been influenced by what they remembered and thought about in connection with the T1 administration. (For example, a respondent could think “those questions were dumb, and it took too long to fill out; I’m tired of answering them again--I think I’ll just put down what comes to mind.”)

The methodology for this study was therefore developed to deal with these potential design issues as follows:

1. *Random assignment.* Subjects were randomly assigned to the direct or indirect experimental conditions, as well as to one of the three levels of the feedback stimulus in order to minimize threats to internal validity.
2. *Counterbalancing.* To avoid order effects, subjects’ exposure to the feedback stimulus was counterbalanced such that half the subjects in each

condition (positive, negative and control stimulus) received their exposure before being asked to elicit attitudes and beliefs toward distance education and half after they had been asked to do so.

3. *Repeated measures ANOVA.* SPSS' repeated measures ANOVA was used to conduct the statistical analyses for hypotheses 1-6. The repeated measures ANOVA was specifically designed to conduct a repeated measures analysis, in that it provides options to enter both within subjects and between subjects factors, and produces two Fs - one testing the significance of the null for column means and one testing it for row means (typically row means are individuals or subjects).
4. *Time between trials.* In a repeated measures design, a "trial" is usually the dependent within subjects variable (Hopkins, 1997). In this study, the "trial" consisted of administering a questionnaire designed to elicit responses to attitudinal and behavioral indexed items at T1 and T2. To reduce the effect of the T1 and T2 trials being too close together, the questionnaire was administered to the sample at T1 early in the semester. Subjects were then randomly assign to either the direct or indirect experience condition and then, after the manipulation was complete, the sample was regrouped two weeks later and the questionnaire was administered a second time, at T2.

Table 3-1 displays the predicted effects of the independent variables of experience and subjective norms feedback on the dependent variable denoting behavior toward technology-based distance education.

Table 3-1.

Predicted Effects of Experience and Positive and Negative Subjective Norms Feedback on Behavior at T1 and T2.

	Feedback			
	Positive		Negative	
	T1	T2	T1	T2
Experience				
Direct Experience	High	Highest	Low	Lower
Indirect Experience	High	Higher	Low	Lowest

### Definition of Scales

Scale items for the questionnaire were adapted from the TOPB framework and Fazio's process model. (See Appendix C for questionnaire instrument.) Attitudinal and behavioral scale items drawn from the TOPB model (attitude and its antecedents; subjective norms and its antecedents; perceived behavioral control and its antecedents; behavioral intent and behavior) consisted of seven-point semantic differential scales anchored by bipolar adjectives (good/bad; favorable/unfavorable; pro/con; appealing/unappealing; like/dislike).

For beliefs, in addition to scales rating favorability dimensions (good/bad; true/untrue), respondents were asked to rank their beliefs according to most and least favorable, in accordance with Petty and Caccioppo's standard thought listing technique (Petty & Caccioppo, 1977).

Attitude accessibility was measured through scale items which ask how easily or quickly thoughts about distance education came to mind (very easily/not very easily; very quickly/not very quickly).

Attitude strength was measured through a set of items comprising an index based on assessing attitude certainty and confidence (Fazio & Zanna, 1978b). Subjects were asked how confident and how certain they were about their evaluation of their feelings toward distance education and toward taking a technology-based distance education class in the next year. All scale items were constructed as seven point semantic differential scales using bipolar adjectives.

For the behavioral measures, seven point semantic differential scales (would/would not ) were used, and respondents were also asked to sign their name to indicate commitment to the target behavior. Finally, in addition to these scales, demographics related to age and gender and a series of manipulation checks were included.

### **Independent Variables**

The major independent variables in this study included the following: experience treatment condition (direct or indirect); and exposure to subjective norms feedback information (positive, negative or neutral).

#### **Direct Experience**

In this study, direct experience was treated as a nominal variable, which was manipulated on the basis of randomly assigning subjects in a traditional, "live instructor" class to either an experimental or a control condition. Those subjects assigned to the experimental condition were treated to a "direct experience" of a technology-based distance education class utilizing a specially developed week long "module" of the regular course content. During this week, subjects in the experimental condition did not attend the regular class; instead, they worked through the same class content using a



distance education class format consisting of videotape of the instructor's lecture combined with access to a specially constructed web site containing lecture notes, and an online bulletin board.

Subjects in the indirect experience condition attended the live class as usual and worked through the same material as the students taking class via the distance education module. The same questionnaire was administered to all subjects, both before and after the treatment manipulations. To track subjects in each of the two treatment conditions, the last six digits of their Social Security number were used.

### **Subjective Norms Feedback**

Exposure to a message stimulus designed to manipulate subject norms served as the second independent variable in the study. To test hypotheses three through six, which sought to predict the effect of exposing subjects subjective norms feedback information designed to enhance the salience of the influence and opinions of relevant peers, all subjects were randomly assigned to one of three conditions:

1. One third of the subjects received a message stimulus purporting to show the results of opinion polling data collected from relevant referents, in this case students attending the same university, purporting to show that a vast majority were in favor of distance education, and would be inclined to take a distance education course if offered. (See Appendix A for copy of stimulus);
2. One third of the subjects received a message stimulus purporting to show the results of opinion polling data collected from the same relevant referents, purporting to show that a vast majority of students were opposed

to distance education, and would not be inclined to take a distance education course if offered. (See Appendix A for copy of stimulus);

3. The final third of the subjects received a control stimulus which provided neutral information describing the course they were currently taking using the description in the current course syllabus. (See Appendix A).

To assess the possibility that exposure to the subjective norms feedback would affect attitudinal responses, the timing of exposure was counterbalanced, such that half of all subjects received the exposure stimulus before the administration of attitudinal scale items, and half after attitudinal scale items had been completed.

Manipulation checks were used to match subjects in their respective conditions against responses, and the questionnaire booklets containing the stimulus as well as the respondents' Social Security numbers were collected after administration and matched for tracking purposes.

### **Dependent and Moderating Variables**

Dependent and moderating variables in this study primarily devolve from the TOPB framework, with the exception of attitude strength, which was measured as a function of attitude certainty, confidence and clarity, as derived from Fazio's work (Fazio & Zanna, 1981, Fazio, 1986). The other moderating variables included the following: attitude, and its TOPB antecedents, beliefs and belief strength; subjective norms, and its antecedents, norms and motivation to comply; and perceived behavioral control and its antecedents, control beliefs and their evaluation. (See Appendix B for descriptions of moderating variables in the study.)

In addition to the scale item indexes designed to assess both general and specific attitudes toward distance education, the questionnaire also included scale items designed to ask respondents about their behavioral intent, as well as items which were used to compile an index of behavior, in order to achieve a multiple act criterion of behavior.

### **Behavioral Intention as a Dependent Variable**

Behavioral intention is one's intention to behave in a certain way with respect to a target behavior, and as such, it is closely related to actual behavior. Within the TOPB framework, behavioral intention is a strong predictor of subsequent behavior, and it is often used as an outcome variable when behavior itself would be hard to measure. In this study, behavioral intent was measured according to the TOPB model, using an index comprised of a set of scale items which assessed the respondent's perception of the likelihood of his or her taking a distance education class in the next year, as well as the more general likelihood of supporting the development of more distance education courses on campus. Table 3-2 displays the questionnaire items relating to behavioral intent.

### **Behavioral Index as a Dependent Variable**

Engaging in technology-based distance education is a fairly complex adoption behavior, one whose trialability is no doubt affected, at this comparatively early stage of the adoption cycle, by factors related to circumstance, availability and institutional support. To control for this complex set of factors, the target adoption behavior was conceptualized and measured on the basis of a multi-item scale derived from Crano (1983) and designed to be compiled and analyzed as a behavioral index. The questionnaire items included a question which asked respondents to commit to taking

Table 3-2  
Behavioral Intent Questionnaire Items

How likely would you be to take a technology based distance education class in the next year?								
Unlikely	1	2	3	4	5	6	7	Likely
How interested are you in taking a technology based distance education class in the next year?								
Very interested	1	2	3	4	5	6	7	Not interested
How willing would you be to support a new student fee, which would fund more equipment for technology based distance education classes?								
Very willing	1	2	3	4	5	6	7	Very unwilling
How supportive are you of the idea of a new student fee, which would fund more equipment for technology based distance education								
Very supportive	1	2	3	4	5	6	7	Not at all

distance education courses, all other factors being equal, within the next two years.

(After the experiment was run, subjects were debriefed in order to inform them that they would not be held to this commitment.) Since, in reality, few universities have distance education classes available to take in every major, and some respondents may either be done with their major requirements or perhaps graduating seniors, the question was worded as follows: "all other factors being equal, and assuming for the moment that classes you would want to and have the ability to take are offered in a distance education format, would you sign here in agreement to take at least two more distance education courses in the next two years."

A second, more general adoption behavior was also tested, that of supporting more development of distance education on campus through supporting a student fee or committing to volunteer to work in support of distance education on campus. Table 3-3 shows the questionnaire items relating to behavior used in the study.

Table 3-3  
Questionnaire Items Used for Behavioral Index

---

Would you be willing to sign a petition supporting creation of a new student fee which would fund more equipment for technology based distance education?

1. yes
2. no

If so, please place your signature on the attached petition.  
Please explain your reasons for your decision

---

All other factors being equal, and assuming for the moment that classes you would want to and have the ability to take are offered in a distance education format, would you be willing to sign here next to this request committing you to take at least two more classes in your major as technology based distance education classes? (Keep in mind that your signing means you agree to take these classes as distance education classes)

1. yes
2. no

Signature \_\_\_\_\_ Date: \_\_\_\_\_

---

Would you be willing to join a group we are forming to advocate more distance education courses on campus? If so, indicate so by answering "1" for yes or "2" for no.

1. yes
  2. no
- 

Would you be willing to volunteer to work as an aid supporting technology based distance education on this campus? If so, indicate so by answering "1" for yes or "2" for no.

1. yes
  2. no
-

### Pretests

To establish a baseline attitude-behavior correlation in order to benchmark how strong the attitude-behavior correlation might be for students who had had a distance education experience similar to the treatment condition used in the study, the same questionnaire as in the experiment was administered to a pre-test sample population comprised of 52 students enrolled in a class in a distance education master's program. This baseline measurement was taken at the end of the semester, on the assumption that subjects would have theoretically formed strongly held attitudes about their experience. Although the resulting  $n$  was small, (only 10 students responded to the mail-in survey), a significant baseline attitude-behavior correlation of .67 was obtained using the general attitude index ( $M = 5.02$ ), and a significant correlation of .65 was obtained using the specific attitude index ( $M = 4.12$ ).

The subjective norms feedback information was also pre-tested on a sample of undergraduates ( $n = 36$ ), in order to insure that the stimulus adequately represented a believable representation of an article excerpt containing opinion polling data that purported to show a vast majority of students either in favor of, or opposed to technology based distance education on their campus. Respondents were shown the materials and then asked to indicate, on a scale ranging from 1 "strongly agree" to 7 "strongly disagree" whether they thought the materials met this criteria. Results of the pretest were successful, ( $M = 5.50$ ), indicating that respondents felt the stimulus was an adequate representation of the subjective norms feedback.

### **Procedure**

For the experiment, all subjects received a color-coded questionnaire booklet consisting of the beliefs elicitation and attitude and behavior scaling measures, as well as the randomly assigned subjective norms feedback stimulus, which was placed as a separate page within the questionnaire packet. For those subjects receiving the stimulus first, they were asked to turn a page and review a message containing information relevant to the rest of the study. Those subjects receiving the feedback information later, after beliefs elicitation and attitude scaling items, received the same instructions to turn the page, review the message, and then proceed on to the next page.

For all groups, subjects were asked to thought list their beliefs about technology-based distance education, evaluate them, and then complete a series of attitude and behavioral scale items. For the behavior measures, subjects were asked to place their signature and date underneath a statement that purported to commit them to the specific behavior.

After the T1 administration, subjects were randomly assigned to the experimental or control conditions through utilization of a random numbers table. Subjects in the control condition were dismissed and asked to return to class for the next scheduled session as usual. Subjects in the experimental condition were asked to stay in the testing room for a meeting during which they were given access to the online materials as well as the video tape containing the instructor's lectures. As part of their instructions, they were told they did not need to attend class during the experiment.

After the testing period, all subjects were re-grouped and again administered the questionnaire instrument. Subjects therefore served as their own control. After the

questionnaire had been administered for the second time, all subjects were de-briefed and thanked for their participation.

### **Manipulation Checks**

A series of manipulation checks were included in the questionnaire instrument to track respondents' stimulus exposure and assignment to a testing condition, as well as control for subjects who had had some form of direct previous experience with technology-based distance education. For the first manipulation check, subjects were asked whether they had received the live class or distance education treatment, as well as whether they had had any previous experience with distance education. (Subjects who had had prior distance education experience were subsequently removed from the study). For the second manipulation check, subjects were asked to identify whether they had been exposed to subjective norms feedback information regarding the percentage of students in favor of distance education on their campus. In addition, they were asked to report what they believed to be the percentage of students favoring distance education at their university (the correct answer was part of the opinion polling data conveyed in the experimental message stimulus).

### **Data Analyses**

The analyses for this experiment can be broken down into three main categories:

1. correlational data, representing measures of relationship;
2. analyses of difference, primarily repeated measures ANOVA; and
3. linear regression analysis.

Hypotheses 1 and 2 utilized measures of relationship to test the relative strength of the attitude-behavior correlations at T2 and at T1 for the direct and indirect experience



groups. To test whether the observed differences between the dependent correlations (hypothesis 1) were significant, Pearson correlations were obtained and a  $t$  statistic was then computed using the test for difference between dependent correlations (Bruning & Kintz, 1987). To test for significant differences between the independent correlations (hypothesis 2), correlations were obtained and a  $z$  score was computed using the test for difference between independent correlations as cited in Bruning and Kintz. Hypotheses three through five focused on analyses of difference, predicting differences between subjects exposed to the direct and indirect treatment conditions, as represented by the independent variable denoted as “group” on the dependent variable of behavioral intent. To conduct these analyses, indices were constructed of behavioral intent items, and a 2 x 2 x 3 repeated measures ANOVA was run utilizing experience (indicating subjects’ random assignment to either the direct or indirect experience treatment condition), subjective norms feedback (a recoded variable denoting whether subjects were exposed to the neutral, positive or negative feedback) and stimulus timing (a variable denoting whether subjects had been exposed to the norms stimulus before or after attitude-behavior elicitation) as between subjects factors, and time of measure as the within subjects factor.

The final hypothesis test was based on conducting linear regression analysis in order to ascertain the most significant predictor variables of the target behavior at T2 for both direct and indirect experience groups, as well as for those respondents in one group or the other who were exposed to either the positive or negative normative stimulus. To conduct the regression analysis, the indexed variables of attitude, subjective norms and perceived behavioral control were entered into a linear regression model with behavioral

intent as the dependent variable. A regression analysis was then performed on the predictor variables for those respondents in the indirect experience treatment condition only.

## CHAPTER 4 FINDINGS

### **Population**

A total of ninety-one respondents participated in the experiment. Of this original number, during data cleaning, 19 cases were removed according to the following criteria for all subsequent tests:

- 1) If the respondents failed to fill out the behavioral index items on both the T1 and T2 of the questionnaire ( $n = 12$ ).
- 2) If the respondents indicated that they had significant prior distance education experience ( $n = 7$ ).

Of the 12 respondents who failed to fill out the T1 and T2 behavioral indices on the questionnaire, six of them instead used the open-ended items to comment on their dislike of distance education and their being asked to support or fund more distance education on their campus; three had difficulty with the mechanics of filling out the instrument, essentially invalidating their responses, and three failed to fill out large sections of the questionnaire without any explanation.

This resulted in a final  $n$  of 72 subjects. General demographics were obtained from the sample for gender, year in school and computer ownership. Responses indicated that 68% of the subjects were male, and 32 % were female. Eighteen percent were freshmen, 28% were sophomores, 36 percent were juniors, 21% were seniors and 1%

were graduate students. Of this number, the vast majority--over 83%--owned a computer. (See Appendix C for questionnaire and frequency responses to each item.)

Of the final sample, a total of 44 respondents were in the direct experience group; 28 participated in the indirect experience condition. This unequal distribution is a limitation of the current study, the result of unexpected attrition in the indirect experience group during the experiment. In addition to being randomly assigned to either the direct or indirect experience group, subjects were also randomly assigned normatively salient information designed to indicate to respondents that relevant peers (in this case fellow students) were either in support of distance education ("88% of students are in favor") or opposed to it ("88% of students are opposed") on their campus.

### **Descriptive Data**

In order to conduct the analyses, indices were constructed for each of the testing variables in the study. Each of the indices was constructed by combining the relevant index items from the questionnaire for both T1 and T2 response sets. Principle component factor analysis using varimax rotation was used on each set of index items to find the items which loaded together as one factor, then reliability analyses were run for each resulting index using Chronbach's alpha statistic. The alpha coefficient is customarily used to assess the internal consistency of multiple items that the experimenter wishes to use to indicate the same construct. (Cook, Campbell, & Peracchio, 1990). Table 4-1 displays the resulting means table for all of the cells in the original research design using behavioral intent as the dependent measure, while Table 4-2 shows the same cells with behavior as the dependent variable.

Table 4-1. Means Table for the Effect of Group, Normative Stimulus Feedback and Time on Behavioral Intent.

	Positive Stimulus		Negative Stimulus		Control Stimulus	
	T1	T2	T1	T2	T1	T2
Direct Experience	3.25 (17)*	3.35 (17)	3.48 (15)	3.20 (15)	2.92 (12)	2.58 (12)
Indirect Experience	3.70 (9)	2.74 (9)	2.86 (7)	2.57 (7)	3.03 (10)	2.77 (10)

\*Parentheses indicate number of subjects per cell

Table 4-2. Means Table for the Effect of Group, Normative Stimulus Feedback and Time on Behavior.

	Positive Stimulus		Negative Stimulus		Control Stimulus	
	T1	T2	T1	T2	T1	T2
Direct Experience	1.88 (17)*	2.03 (17)	2.38 (15)	2.10 (15)	1.60 (12)	1.63 (12)
Indirect Experience	2.33 (9)	2.01 (9)	2.29 (7)	1.64 (7)	2.00 (10)	2.00 (10)

\*number of subjects per cell

For hypotheses 1 and 2, attitudinal indices were constructed for both general and specific attitudes toward technology based distance education. As was suggested earlier, in keeping with Fishbein and Azjen's (1977) principle of correspondence, which holds that attitude and behavior will be correlated to the extent that they are defined at the same level of specificity, attitudes were measured both at the level of general attitudes towards distance education as well as subjects' more specific evaluations of taking a distance education class in the near future. The general attitude index was constructed of six items that included the bipolar measures positive/negative, good/bad, favorable/unfavorable,

pro/con, appealing/unappealing, and like/dislike. Exploratory factor analysis revealed that all six items loaded as one factor, eigenvalue = 5.28, accounting for approximately 88% of the variability.

For the general attitude index, scores ranged from 1 as being most negative to 7 as most positive. The T1 general attitude mean was 4.18 (SD = 1.67); the T2 mean was 3.91 (SD = 1.86). The standardized item alpha for the six-item scale was .97 at both T1 and T2. The specific attitude index was also comprised of the same six bipolar measures, which were used in the questionnaire to evaluate respondents' attitude toward taking a distance education class in the next year. Exploratory factor analysis revealed that all six items loaded as one factor, eigenvalue = 5.48, accounting for 91% of the variability.

For the specific attitude measure, scores also ranged from 1 to 7, with one being most negative and 7 most positive. The mean for specific attitude at T1 was 4.01 (SD = 1.89); the mean at T2 was 3.83 (SD = 2.07). The standardized item alpha for this six-item index was .98 at both T1 and T2. See Tables 4-3 and 4-4 for means for the general and specific attitude indices at T1 and T2.

Table 4-3. Means Table for General Attitude Index

	Positive Stimulus		Negative Stimulus		Control Stimulus	
	T1	T2	T1	T2	T1	T2
Direct Experience	4.27 (17)	4.56 (17)	4.44 (15)	4.31 (15)	4.33 (12)	3.51 (12)
Indirect Experience	4.29 (9)	4.33 (9)	3.30 (7)	3.35 (7)	3.96 (10)	3.91 (10)

Table 4-4. Means Table for Specific Attitude Index

	Positive Stimulus		Negative Stimulus		Control Stimulus	
	T1	T2	T1	T2	T1	T2
Direct Experience	4.29 (17)	3.98 (17)	4.68 (15)	4.46 (15)	4.06 (12)	3.33 (12)
Indirect Experience	3.35 (9)	3.53 (9)	3.77 (7)	3.25 (7)	3.46 (10)	3.56 (10)

For the behavioral testing variables, indices were constructed for both behavior and behavioral intent, in keeping with the TOPB framework, which is based on using behavioral intention to predict behavior. The behavior index was constructed as a four-item index, using the items listed in Table 3-2, with values ranging from 1 for least likely to engage in the target behavior to 7 for most likely. Factor analysis results indicated that the index loaded as one factor, with an eigenvalue = 2.46, accounting for approximately 62% of the variance. The resulting means were 1.83 (SD = 1.62) for behavior at T1 and 1.81 (SD = 1.58) for behavior at T2. Reliability for the behavior index at T1 was .78; at T2, the standardized item alpha was .77.

The behavioral intent index was originally constructed as a four-item index, (see Table 3-3 for original index items) but principle component analysis revealed that three items loaded as one factor, while a fourth item, interest in taking a distance education class in the next year, did not load on this factor.

A three-item index was subsequently constructed, which did load as one factor through removal of this item, eigenvalue = 1.65, accounting for 55% of the variance. The resulting index included the same range of values as the behavior index, generating a mean of 3.22 (SD = 1.48) at T1 and a mean of 2.95 (SD = 1.39) at T2. Standardized item alpha for the three-item index was somewhat low at .55 T1 and .42 at T2. Consequently,

two two item indices for behavioral intent that separated items relating to support of technology based distance education from those involving direct decisional behavior were also constructed for supplementary post hoc analysis. Means and reliability for these indices will be reported in the post hoc analysis section. Tables 4-5 and 4-6 show means for the four-item behavior and three item behavioral intent indices at T1 and T2.

Table 4-5. Means Table for Behavior Indices at T1 and T2

	T1	T2
Direct Experience	1.94 (44)	1.94 (44)
Indirect Experience	1.66 (27)	1.61 (27)

Table 4-6. Means Table for Behavioral Intent Indices at T1 and T2.

	T1	T2
Direct Experience	3.24 (44)	3.09 (44)
Indirect Experience	3.22 (27)	2.66 (27)

Finally, for hypothesis 6, indices for the predictor variables in the TOPB model were constructed. Standardized item alphas for these indices were .98 for attitude; .69 for subjective norms and .40 for perceived behavioral control.

### Manipulation Checks

A series of manipulation checks designed to insure that the observed responses were in fact the result of the variables being manipulated in the experiment were conducted. The first manipulation check was designed to insure that the experience manipulation was successful, in that subjects who had been randomly assigned to either



the indirect or direct experience treatment conditions did, in fact, report this difference in their status at T2. To check for this manipulation, a single item dependent variable that asked respondents to indicate whether they had been exposed to the technology based distance education treatment or the live classroom was used. For this item, scores ranged from 1, which indicated the live classroom condition, to 2, which indicated the distance education treatment.

A full-factor  $2 \times 2 \times 3$  ANOVA was run, using as between subjects factors the independent variables of experience (direct or indirect experience treatment), subjective norms feedback and timing of the stimulus (before or after attitude elicitation). The variable corresponding to respondents' reports of their exposure to either the distance education or live classroom treatment served as the within subjects factor. The results showed the anticipated main effect, indicating the expected differences between the direct and indirect experience groups and subjects' reports of the group to which they had been randomly assigned,  $F(1, 69) = 336.23, p < .003$ . Means for the direct experience group ( $M = 2.00$ ) and indirect experience group ( $M = 1.07$ ) clearly indicated the correct treatment group designation

A second manipulation check was conducted in order to insure that the subjective norms manipulation was successful. To test for this difference, a three item index was constructed of items which asked respondents to report as to whether they had received subjective norms feedback, recoded to score as "1" for no and "7" for yes, as well as indicate what they thought was the percentage of students in favor of distance education, and whether or not they thought a majority of students were in favor of it. These questions directly related to the quality and valence of normative opinions as represented

in the different forms of the stimulus. Recoded scores for these items ranged from 1 = strongly disagree to 7 = strongly agree. Overall means for this variable index were 3.07, SD = 1.16 at T1 and 3.18, SD = 1.12 at T2.

After conducting principle component factor analysis (eigenvalue = 2.55, accounting for 71% of the variability), and reliability analysis on the subjective norms manipulation index, (standardized item alpha = .59), a 2 x 2 x 3 ANOVA was run, results of which revealed a main effect for subjective norms feedback,  $F(2, 69) = 4.43, p < .02$ . A subsequent one-way ANOVA using the T2 subjective norms manipulation index as the dependent measure and subjective norms feedback as the between subjects factor was significant,  $F(2, 69) = 9.75, p < .00$ . Further analysis of the feedback means was done by using a multiple comparison Scheffe's test which revealed that the subjective norms manipulation index mean for subjects in the positive feedback condition was significantly different from the means for either the negative or neutral feedback conditions. The means for the negative and neutral feedback conditions, however, did not test as significantly different from each other. Overall means by feedback condition were as follows:  $M = 3.84$  for subjects who got the positive feedback;  $M = 2.95$  for subjects who received the negative feedback; and  $M = 2.85$  for subjects who received neutral feedback information. These results indicated that subjects who received positive subjective norms feedback were more positive in their assessment of the percentage of students on campus who favored distance education than subjects who received either the negative or neutral feedback.

### Hypothesis Tests

Hypothesis 1, which predicted that the dependent correlation between attitude and behavior would be stronger for the direct experience subjects at T2 than at T1, was not supported. To thoroughly test this hypothesis, both general and specific attitude--behavior and attitude--behavioral intent correlations were developed with the behavior and behavioral intent index variables, in keeping with the TOPB model in which behavioral intent is the direct and strongest predictor of behavior. In addition, attitude-behavior correlations were also developed using two two-item indices representing decision behaviors vs. support behaviors. Finally, the single item attitude-behavior correlations were also analyzed. (See post hoc analyses section). Table 4-7 shows the A-B correlations for general and specific attitude to behavior (B), as well as the correlations from behavioral intent to behavior, while Table 4-8 displays the same data for the attitude to behavioral intent (BI) correlations.

Table 4-7. A – B Correlation Table at T1 and T2.

	General A-B		Specific A-B		BI-B	
	T1	T2	T1	T2	T1	T2
Direct Experience	.30	.43	.35	.41	.44	.52
Indirect Experience	.18	.42	.57	.48	.47	.60

Table 4-8. A – BI Correlation Table at T1 and T2.

	General A-BI		Specific A-BI		BI-B	
	T1	T2	T1	T2	T1	T2
Direct Experience	.60	.60	.65	.61	.44	.52
Indirect Experience	.31	.75	.47	.71	.47	.60

Using a  $t$  statistic computed from the test for dependent correlations, tests of difference from T1 to T2 for the attitude-behavior correlations using the four-item behavior and three-item behavioral intent indices were not significant at  $p < .05$ , ( $t < 1.680$ ). Results indicated that, although the magnitude of the correlations seemed to suggest an increase in strength from T1 to T2, the difference was not significant based on utilizing the conservative  $t$  test measure.

Hypothesis 2, which predicted that the independent correlation between attitude and behavior for direct experience subjects at T2 would be stronger than for the indirect experience group at T2, was not supported. To test this hypothesis, independent attitude-behavior correlations for both the direct and indirect experience groups were calculated, and a  $z$  score was computed using the test for independent correlations. Results revealed no significant difference between the correlations for the direct and indirect experience groups at T2,  $p < .05$  ( $z < 1.196$ ). Table 4-9 displays the general and specific attitude-behavior correlations for both groups at T2, while Table 4-10 displays the same results for general and specific attitude-behavior intent correlations.

Table 4-9. General and Specific Attitude – Behavior Correlations for Direct and Indirect Experience Groups at T2.

	Direct Experience	Indirect Experience
General A-B	.43	.52
Specific A-B	.41	.48

Table 4-10. General and Specific Attitude Behavioral Intent Correlations for Direct and Indirect Experience Groups at T2.

	Direct Experience	Indirect Experience
General A-BI	.60	.75
Specific A-BI	.61	.71

Hypothesis 3 predicted a three way interaction on the dependent measures between the direct and indirect experience groups, the subjective norms feedback information which they received and the within subjects factor of time at T1 and T2. To test this hypothesis, a  $2 \times 2 \times 3$  repeated measures ANOVA was run, utilizing experience, the subjective norms feedback stimulus and the timing of the stimulus as between subjects factors and (in separate analyses) first behavior, then behavioral intent as the within subject factor dependent measure at T1 and T2. This hypothesis was not supported for either behavior,  $F(1, 58) = .10, p < .9$ , or behavioral intent;  $F(1, 58) = 1.05, p < .4$ . However, a significant two-way interaction was found between stimulus timing and time,  $F(1, 58) = 4.32, p < .04$ , on the dependent measure of behavioral intent. Further analysis of the interaction effect revealed a simple main effect for stimulus timing at T2,  $F(1, 33) = 6.87, p < .01$ , which indicated that timing of the stimulus had a significant negative effect on behavioral intent for those subjects who received the subjective norms feedback stimulus after attitudes elicitation but not on those subjects who received it before they were asked to report their beliefs and attitudes toward distance education,  $F(1, 25) = .096, p < .8$ . Table 4-11 shows the resulting means table for the timing of the stimulus for the direct and indirect experience groups at T1 and T2.

Table 4-11. Behavioral Intent Means for Subjects Receiving the Subjective Norms Feedback Stimulus Early and Late at T1 and T2.

	Early Stimulus Timing		Late Stimulus Timing	
	T1	T2	T1	T2
Direct Experience	3.12 (20)	3.08 (20)	3.35 (24)	3.10 (24)
Indirect Experience	2.97 (11)	3.24 (11)	3.40 (15)	2.31 (15)

Hypotheses 4 and 5, which predicted that those subjects in the indirect experience treatment condition who were also exposed to a positive normative stimulus would be more likely to engage in the target behavior, while those exposed to a negative normative stimulus would be less likely to engage in the behavior, was partially supported. To test this hypothesis, only respondents from the indirect experience condition were examined. The ANOVA model used to conduct the test was a subjective norms stimulus (3 levels) by timing (two levels on behavioral intent) design. ANOVA results were not significant  $F(2, 23) = .61, p < .6$ . Subsequent ANOVA testing for main effects of the normative stimulus exposure was not significant, although a simple interaction effect for subjects in the indirect experience condition who were exposed to the positive normative stimulus  $F(1, 22) = 2.98$ , was significant at  $p < .1$ . In addition, a simple interaction effect was found for this group between timing of the stimulus and time on the behavioral intent dependent measure,  $F(1, 22) = 5.63, p < .03$ . Table 4-12 displays the behavioral intent means table grouped by feedback and timing of the stimulus for subjects in the indirect experience group and T1 and T2.

Table 4-12. Behavioral Intent Means for Indirect Experience Group by Timing of the Stimulus and Subjective Norms Feedback Stimulus at T1 and T2.

	Positive Stimulus		Negative Stimulus		Control Stimulus	
	T1	T2	T1	T2	T1	T2
Early Stimulus (n = 31)	3.44	4.11	3.08	3.30	2.01	3.00
Late Stimulus (n = 40)	2.39	3.50	2.55	1.55	3.72	2.61

These results indicated that, for subjects in the indirect experience group who were exposed to the positive stimulus, behavioral intent increased from T1 to T2. In addition, indirect experience subjects who were exposed to the feedback stimulus early had greater behavioral intent toward the target behavior than did those subjects exposed to it later.

Hypothesis 6, the final hypothesis, attempted to fit a model predicting the contribution effects of attitude, subjective norms and perceived behavioral control on behavioral intent as follows:

For those subjects with direct experience, attitude will be the strongest predictor, while for those subjects with indirect experience, subjective norms and perceived behavioral control will be the strongest predictors.

H6 was supported for the direct and partially supported for the indirect experience groups. For the direct experience group, the index variables of attitude, subjective norms and perceived behavioral control were entered into a linear regression analysis, which revealed that attitude was the only significant predictor of behavioral intent for this group ( $p < .001$ ). For the indirect experience group, the variables were again entered into a linear regression model. Results indicated that the subjective norms variable was the only

significant predictor of behavioral intent for the indirect experience group ( $p < .000$ ). A supplementary analysis entering all subjects into the model was also conducted, which revealed that, for all subjects, attitude and subjective norms were the most important predictor variables of behavioral intent ( $p < .000$ ). See Table 4-13 for regression correlations, beta weights and  $R^2$  for each analysis.

Table 4-13. Attitude (AT), Subjective Norms (SN) and Perceived Behavioral Control (PBC) as Predictor Variables of Behavioral Intent

Variables		r	Beta	R <sup>2</sup>
Direct Experience	AT	.37	.41**	
	SN	.19	.20	
	PBC	-.11	-.10	.35
All Subjects	AT	.35	.34**	
	SN	.32	.36**	
	PBC	.06	-.05	.41
Indirect Experience	AT	.35	.30*	
	SN	.56	.55**	
	PBC	.16	-.10	.62

\* $p < .05$     \*\* $p < .01$

### Post Hoc Analyses

In addition to the main hypothesis, a series of supplementary post hoc analyses were conducted in an attempt to explore some of the inferences suggested by the findings. The first supplementary analysis involved converting the four-item behavior index into two two-item indices. This was done in an attempt to distinguish between the more specific decisional behaviors, which consisted of the items asking respondents to sign a petition to support distance education and to commit to take at least two distance education courses, from those more general behaviors involving support of technology



based distance education. These more general support behaviors consisted of one item asking respondents if they would join a distance education advocacy group and a second item asking them if they would volunteer to work as an aid supporting distance education on their campus. Reliability analyses run on the two two-item indices resulted in a standardized item alpha of .70 at T1 and .83 at T2 for the behavioral support index, and .87 and .61 at T1 and T2, respectively, for the decisional behavioral index. Table 4-14 displays the means for the two indices.

Table 4-14. Means Table for Two Item Decisional Behavior and Behavioral Support Indices.

	T1	T2
Decisional Behavior Index (72)	1.83	1.83
Behavioral Support Index (72)	1.85	1.79

Results of a repeated measures ANOVA utilizing experience (two levels) subjective norms stimulus (three levels) and time (two levels) for the two-item decisional behavior index were not significant, but a significant two-way interaction between time and experience was found using the two-item behavioral support index  $F(1,57) = 4.197$ ,  $p < .05$ . Further testing showed a simple main effect of time for the indirect experience group on behavioral intent,  $F(1, 19) = 4.88$ ,  $P < .04$ , but not the direct experience group. Means showed that for the indirect experience group, behavioral support of the target behavior was significantly lower at T2 than at T1. Table 4-15 shows the resulting means for the direct and indirect experience groups at T1 and T2.

Table 4-15. Means Table for Effect of Direct and Indirect Treatment Groups on Behavioral Support.

	T1	T2
Direct Experience	1.82 (44)	2.02 (44)
Indirect Experience	1.92 (27)	1.44 (27)

A second supplementary analysis involved developing attitude to behavior correlations for the two two item behavior indices, as well as for each of the four behavior items, and analyzing for differences in strength by applying the *t* test for differences between dependent and independent correlations. Results of this analysis revealed that the only significantly different correlations involved the dependent T1 and T2 correlations for the direct experience group. Results of the *t* test for difference between dependent correlations indicated that the general attitude to the single behavior item asking respondents to volunteer to work as an aid supporting distance education on their campus was significantly higher from T1 to T2,  $t(41) = 2.084$ ,  $t < 1.680$ . Table 4-16 shows the general attitude to behavior correlations for the direct experience group at T1 and T2.

Table 4-16. General Attitude to Behavior Correlations for Direct Experience Group, T2 > T1.

	T1	T2
Direct Experience	.18	.33
Indirect Experience	.12	.42

A subsequent 2 (experience) x 2 (stimulus timing) x 3 (subjective norms feedback repeated measures ANOVA was run using the single behavioral item as the dependent

measure. A main effect was found for the subjective norms feedback,  $F(2, 58) = 3.46$ ,  $P < .04$ . Table 4-17 displays the means for the main effect of the subjective norms feedback on the single behavioral support item, which indicates that subjects in the positive feedback condition displayed higher levels of behavioral support from T1 to T2 than did subjects in the other two conditions.

Table 4-17. Means Table for Main Effect of Feedback on Single Behavioral Support Item.

	T1	T2
Positive Feedback	1.92 (26)	2.38 (26)
Negative Feedback	1.27 (23)	1.00 (23)
Control	2.82 (22)	2.04 (22)

The third supplementary analysis was conducted in an attempt to explore the effect of experience and exposure to the subjective norms feedback on attitude certainty. According to Fazio, attitude certainty is a construct that moderates the attitude to behavior relationship. High levels of attitude certainty enhance the consistency and strength of the A-B correlation and result in more predictable behavior (Fazio, 1982). Attitude certainty was constructed as a three-item index, comprised of two items asking respondents how certain and confident they were in their evaluation of their attitude toward distance education, as well as a third item asking respondents how certain they were of their evaluation toward taking a technology based distance education course. The index loaded as one factor, eigenvalue = 2.43, accounting for approximately 82% of the variability, with a standardized item alpha of .91 at T1 and T2.

A repeated measures ANOVA was conducted utilizing experience (two levels) subjective norms feedback exposure (three levels) and stimulus timing (two levels) as the between subjects factors and attitude certainty as the within subjects factor. Although the three way interaction was not significant at  $p < .05$ , it was significant at  $p < .10$ ,  $F(1, 58) = 2.77$ ,  $p < .07$ . To analyze the three-way interaction, the simple two way interactions between experience and each feedback stimulus condition were analyzed, then the simple interactions of the feedback stimulus on the direct and then indirect experience groups was analyzed. Results revealed a main effect for the direct and indirect experience groups on time,  $F(1, 58) = 3.83$ ,  $p < .05$ . Table 4-18 shows the means for attitude certainty for the direct and indirect experience groups.

Analysis of the simple two-way interactions within the stimulus showed no significant simple simple effects for subjective norms feedback. Further analysis of the simple two-way interactions within experience revealed a simple simple main effect for the direct experience group on time,  $F(1, 41) = 10.22$ ,  $p < .00$ , indicating that for this group, attitude certainty significantly increased from T1 to T2, but this was not the case for the indirect experience group,  $F(1, 23) = .24$ ,  $p < .6$ .

Table 4-18. Attitude Certainty Means for Direct and Indirect Experience Groups at T1 and T2.

	Positive Stimulus		Negative Stimulus		Control Stimulus	
	T1	T2	T1	T2	T1	T2
Direct Experience	5.63 (17)	6.27 (17)	4.71 (15)	5.40 (15)	5.09 (12)	5.45 (12)
Indirect Experience	5.15 (9)	5.22 (9)	5.61 (7)	5.40 (7)	4.70 (10)	5.20 (10)

## CHAPTER 5 DISCUSSION

### Overview

This study involved examining the effect of direct experience on attitude-behavior correspondence with respect to adoption behavior in distance education. As such, the study had three major objectives:

1. examine the effect of direct experience on the strength of the attitude behavior relationship and the target adoption behaviors related to technology-based distance education;
2. establish the effect and contribution of moderating variables, such as attitude strength, subjective norms and perceived behavioral control, on behavioral intent and behavior toward technology based distance education; and
3. Explore the effect of a message stimulus designed to enhance the salience of subjective norms (positive and negative) on behavior for those subjects with direct and indirect experience of the target adoption behavior.

As such, this study was based on the idea of applying two efficacious frameworks, the Theory of Planned Behavior (TOPB) (Ajzen, 1991; Ajzen & Madden, 1986) and Fazio's process model, (1986) to the study of attitudes and behavior in distance education in a way in which they have not been applied before. The theoretical underpinnings of the attitude-behavior correspondence are well understood in other domains, but the relationship has not been much explored within the context of distance education.

### Limitations

Although the results of this study are interesting, and offer some support for the idea that experience and subject norms are both relevant moderating variables which affect the attitude-behavior relationship in the context of technology – based distance education, any generalizations from these findings must take into account certain factors which represent limitations of the study.

The difficulties inherent in attempting to fit a theoretical model in a new context, complicated further by issues of participation and the somewhat controversial nature of the topic to the subjects involved are limitations of this study. As an exploratory effort operating in relatively new and unexplored terrain, one of the major issues confronted in this study involved being able to operationalize the construct of “technology based distance education” across a broad and potentially variegated class of behaviors. As a result, especially for subjects with limited direct experience, the notion of “taking a distance education class” could have meant very different things, and this could have caused a generally more negative evaluation of the experimental manipulation than would otherwise have been the case if there was a more “standard” model of distance education available (an effect which may operate in much the same way in the “real world”).

From a methodological standpoint, the procedure involved in setting up the experiment was, in general, fairly challenging. Since this was an applied study, the experiment had to take place in a real classroom situation. Subjects had to agree to participate over a period of several weeks while the experiment was running, and be on hand to fill out the same questionnaire in the same way at T1 and T2. As a result, some subjects dropped out due to being absent during one of the two measurements, or because

they failed to participate in the treatment condition to which they had been randomly assigned. Some subjects who had negative feelings towards distance education declined to participate after being randomly assigned to a treatment group, and some subjects declined to fill out the behavioral measures on the questionnaire due to their attitudes.

Because technology based distance education is usually based on multiple modality instructional delivery, both a video based lecture module and a special distance education class Web site had to be constructed and made available to subjects. Although not in the scope of this study, subject reactions to such combinations of instructional delivery media, combined with other interacting factors such as course content and teaching and learning styles, may have had some effect on behavioral response. The potential presence of unknown intervening variables made the process of teasing out causal explanations of behavior in such a setting particularly challenging.

In the present study, the success of the experience manipulation depended on subjects' ability to see themselves as really having had a distance education experience, as opposed to the reality of participating in a study of distance education. A short module of lectures, combined with the artificiality of the testing situation and the effect of intervening variables may therefore not have been a strong enough treatment to elicit a significant effect.

Indeed, one of the perceived weaknesses of the present investigation, shared by many studies which attempt to predict some type of behavioral response, is that the measurement of behavior is not taking place at the time of occurrence, that is, when someone has taken or elected to take a distance education course. Although behavioral intent is, as in this study, usually used as a surrogate, and one that is normally a quite

potent predictor of behavior, there are a number of factors which have been known to impact the BI-B relationship in this context, such as not finding a course in one's major or not having room in one's schedule. Although the questionnaire was worded in such a way as to specifically advise respondents to disregard these sorts of factors, it is quite possible that subjects retained their perceptions of these factors as issues, and this could have impacted the behavioral response. Also, in this study, the experience manipulation was based on a short-term distance education module developed specifically for the experiment. It might be, however, that in this domain, experience should be measured on more of a time basis, perhaps by initiating a longitudinal study to examine the effect of direct experience based on exposure to a full term distance education experience (or experiences).

Some additional limitations of the study relate to the sample size. Several subjects did not fill out the questionnaire correctly at T1 and T2, and this, coupled with attrition between the T1 and T2 phases of the experiment, led to a smaller than anticipated sample size. Unfortunately, although the study's repeated measures design served to increase its statistical power, the nature of the design also increased the amount of effort required to participate, which had a negative effect on the sample size. The resulting  $n$  of 72 subjects was therefore somewhat disappointing, since the number of cells in the design made it difficult to look at potential covariates. More importantly, given the conservative nature of the analyses that were utilized, a larger  $n$  might have yielded a more significant result in some cases.

The unequal distribution between the direct and indirect experience treatment groups was a second limitation that is related to the sample size issues. The greater



attrition in the indirect experience group might be attributable, in some measure, to an effect of the manipulation--that the indirect experience group's weaker attitudes and level of interest made it more likely that they would fail to complete the T1 and T2 questionnaires as directed. Here again, the resulting inequality, combined with the number of cells in the study, made the data analysis more challenging.

### **Implications of the Study**

Although the hypotheses in this study were, at best, only partially supported, useful inferences can still be made about the effect of experience in the domain of distance education, as well as the impact of subjective norms on the relationship between weakly held attitudes and behavior toward distance education.

Although distance education has been around for over a hundred years, technology based distance education courses and programs have developed only over the last fifteen years or so, in conjunction with the development of new communications technologies such as the Internet, the World Wide Web and compressed and satellite video. At this stage in the adoption of technology based distance education, many more students have generalized attitudes about distance education, formed on the basis of knowledge that is not a function of direct experience than those who have some specific experience of it. As institutions of higher learning seek to expand distance education offerings, and academia attempts to come to terms with the phenomenon, it becomes more important in an applied sense to have a sense of who the market is for these courses, what are the attitudes they hold, and how effectively can they be marketed to in an attempt to ascertain whether this latest evolution in education at a distance will make a viable contribution to higher education.

In looking at the results of the hypothesis tests, it is perhaps important to note that although the attitude--behavior correlations were not significantly different, they may in fact have a certain applied significance. Fishbein and Ajzen (1980) operationally defined attitude--behavior consistency as strong when measures have bivariate correlations of .40 or larger in magnitude. In the present study, attitude--behavior correlations at T2 for both direct and indirect experience groups ranged from .41 to .71, which seems to indicate at least a moderate to strong relationship. In fact, attitude-behavior correlations, and attitude means in general, appeared to be fairly stable across all cells. The relative lack of difference across cells may in fact be due to a phenomenon that is also a factor in real life--students who live, work and study together in close quarters in real life may have talked across conditions in their experimental cells, which would have tended to flatten experimental differences.

In general, based on the results of this study, behavioral intent toward taking a technology based distance education course was somewhat low in the sample population of traditional-aged college students, and the direct experience manipulation did not change this greatly. It did appear, however, that the subjective norms feedback did affect behavioral intent for subjects in the indirect treatment condition to some extent. Although behavioral intent was lower at T2 for both the direct and indirect experience groups, the behavioral intent of subjects in the indirect experience condition who were exposed to the positive feedback stimulus increased over time. This seems to provide some support for the idea that subjects with weakly held attitudes are susceptible to subjective norms influence and messages that contain them. Along these same lines, the implications of the linear regression analyses seem fairly straightforward and provide

some additional support for the effect of subjective norms on subjects who lack experience of distance education. For those subjects in the direct experience treatment condition, it was anticipated that attitude would be a strong predictor of behavioral intent toward distance education. Based on the results, it could be assumed that these subjects' higher levels of attitude strength fostered a fairly consistent attitude--behavior relationship and thus made attitude the strongest (and only) significant predictor of behavioral intent for this group.

For those subjects without direct experience, attitude retained its predictive utility, but the feedback manipulation seems to have increased the salience of subjective norms as a strong predictor variable of behavioral intent. As in the Irani & O'Malley pilot study, perceived behavioral control was not a factor, indicating that distance education adoption behavior, at least for this group, seems more the result of perceptual evaluations of course content and utility combined with degree of attending to the attitudes and opinions of others. This provides support for the argument that lack of experience of the target adoption behavior increases subjects' susceptibility to external influences, even though, as in this study, those influences may not greatly impact attitudes and behavior measured shortly thereafter. What effect repeated exposure to such influences, and how these effects might decay or interact with attitude over a longer period of time, is potentially an area for further research.

Finally, the finding of an interaction effect for timing of the stimulus and time on the dependent measure of behavioral intent is intriguing, although somewhat hard to interpret, since no hypotheses were made to account for what was essentially a counterbalancing measure. Although individual subjects may act quite differently,

depending on how a host of individual difference variables such as involvement, motivation, vested interest, and prior behavior interact with attitude and behavior, we do know that certain variables, such as experience, tend to moderate the effect of these influences and stabilize the attitude-behavior relationship.

On the other hand, when and how measurement occurs may be an influence in and of itself. In a consumer purchase behavior study, Morwitz, Johnson, and Schmittlein (1993) found that repeated measurement of intention could cause stated intentions to become more polarized over successive measures, making positive intentions more positive and negative ones more negative. They found that this effect extended to actual purchase behavior as well. Based on this finding, it can be argued, perhaps, that in this study, subjects' already negative intentions became more polarized and therefore more negative as a result of the experimental and testing procedures. Further, this effect was more pronounced for those subjects who received the feedback stimulus late, after attitudes were elicited and just before being asked to answer the behavioral intent items.

As for the post hoc analyses, the results add two interesting points to this discussion. First, the significant findings for the two item behavioral support index and the single behavioral item of volunteering to work as an aid in support of distance education seem to suggest that experience might have more predictive utility when analyzed in relationship to more general behaviors, such as support of distance education, than when looked at in terms of specific adoption behaviors. Specific behaviors related to distance education, such as taking a class within a specified period of time, are more subject to individual variation and perceptions, and, according to Ajzen (1991), are therefore unlikely to be predicted by general attitudes.

Secondly, the marginally significant three-way interaction and the main effect for attitude certainty suggest that the experience manipulation did have a measurable effect in terms of serving to increase the strength and certainty of respondents' attitudes. The inference that might be drawn from this is that an initial experience (direct or indirect) of a technological innovation serves to reinforce existing perceptions, to the extent that subjects selectively attend to those aspects of the experience that conform to their expectations. In the case of preexisting moderate to low attitudes, as evidenced by subjects in this study, the effect of experience seems to have made subjects more certain in their evaluations, and this might have actually served to increase the consistency, if not the overall strength and valance, of the attitude-behavior relationship from T1 to T2. Fazio and Zanna offer some support for this conclusion in their 1978 study, in which they inferred from their own results, "direct experience may influence consistency only indirectly through its effect on certainty" (p. 405).

Finally, although attitudes themselves were not the focus of this study, it is important to note that not all attitudinal evaluations are easily captured on the basis of bipolar measurement with a neutral midpoint, as used in this study. Researchers have generally assumed that attitudes have both a cognitive and an affective component (Eagley & Chaiken, 1995), either of which may play off against each other to create inconsistencies in evaluations of the attitude object. In this study, subjects in both experience conditions may have experienced conflicted attitudes, in which they evaluated some aspects of their treatment or pre-existing perceptions positively and others negatively. This would effectively limit the ability of attitude, either general or specific,

to serve as a good predictor of behavior in this context. This would be a worthy area for further research.

### **General Conclusions**

One of the goals of this research program is to develop a useful framework with which to study attitude behavior congruence in a variety of contexts that are informed by the shared characteristics of new communications technologies and a mix of strong and weakly held attitudes on the part of potential adopters. One of the major themes of this study deals with attempting to understand what motivates subjects' decision-making with respect to new media adoption in domains such as technology based distance education which are, as yet, not widely experienced or easily categorized by their potential consumers. In these contexts, the decisions individuals make to adopt and use such technologies are typically weighted by a myriad of issues relating to the quality and nature of individual experience, access, control, prevailing attitudes and beliefs, and normative influences, yet some enabling factors must come into play during the adoption period for a large enough pool of individuals for these innovations to be able to achieve critical mass. This is a dynamic that has been only minimally addressed in the current, exploratory study and is worthy of further research.

From a theoretical perspective, technology based distance education is an emerging, but still relatively new, phenomenon in mass communications. It could be argued that there is, as yet, not much of a theoretical framework for distance education studies, which have been primarily focused on looking at inputs and outcomes as separate concepts and taking a systems view of the development process. To that end, although there are several studies in the field of traditional education that use the TOPB

framework, there are very few studies of distance education which employ it. Further, the concepts of attitude strength and attitude behavior correspondence are new and unexamined constructs in this domain.

The implications of looking at behavior as a dependent variable within the context of distance education may also have some applied significance. For most students at this stage of the adoption cycle, it is not clear whether distance education is entirely volitional or involitional. These students are being asked to engage in an adoption behavior for which they have very little contextual basis. In order to understand how to motivate desirable behavioral outcomes among such students, one needs to understand the influences and processes that guide behavior and intent. One of the areas where this is important is in attempting to decide on message strategy and targeting of potential students for future distance education programs. Results of the current study seem to suggest that it may be better and more effective to concentrate on trying to strengthen already positive attitudes than to target weakly held ones, either by strengthening them in the positive direction or introducing moderating influences (such as norms) that might drive behavior in the desired direction. Given the relatively negative evaluations and behavioral intent of the subjects in this study, this might suggest that traditional aged students represent a target that will be more challenging to market and to serve than adult learners. Faculty, course developers, and institutional administrators might profit from taking this into account early on in the development cycle of distance education programs and courses aimed at traditional aged student audiences.

### **Institutional Implications**

It seems apparent that modern traditional-aged students expect a fair amount of choice and input when it comes to being asked to support institutional initiatives that affect their role as consumers of higher education. Although the notion of consumer choice seems perfectly consistent with the marketing philosophy of most of this country's successful consumer marketing organizations, it is not at all certain that this lesson is being heeded by institutions of higher learning.

The "if we build it, they will come" mentality of many institutional administrators and developers is not necessarily enough to counterbalance some of the issues that distance education faces, such as the impact of social distance and inconsistently performing technology, frustration due to students' learning curves in mastering course technology, development costs, and lack of viability of multi-course programs needed to achieve critical mass. Certainly, all signs point to dramatic changes in technology in the near future that could dramatically improve this situation and, by extension, the comfort level and attitudes of student and faculty alike. However, if institutions wish to prepare to take advantages of these changes, they may need to revise their marketing philosophy with respect to looking at their students as consumers of higher education.

From the institutional perspective, there are obvious incentives in developing technologically innovative distance education programs in terms of resource allocations, enhanced marketing presence, and cost, as well as some inherent disincentives (e.g., disagreements over ownership or intellectual capital and start-up costs). Earlier in the adoption cycle, when most distance education programs were small, single-department based efforts aimed at the strongly motivated adult learner/continuing education student,



there was little need to think in terms of a student consumer marketplace which could influence the success or failure of a program. Now that institutions of higher learning are turning their attention to their traditional student base, however, it may be time to realize that colleges and universities need to play by the same rules as other consumer marketing organizations. While early adopters may be intrinsically motivated to adopt a new technological innovation, larger populations of late adopters and early majorities may have quite different needs and motivations for their behavior. For example, this study indicates that, at least from the perspective of the traditional aged students in the sample, distance education may not necessarily be an educational innovation that could be very successful with this type of student. Any change an institution would therefore wish to make to change this would undoubtedly have to have clearly understood benefits before such students would be willing to adjust their perceptions and attitudes.

### **Marketing Implications**

This study points out how important proper planning and care in structuring the “standard” distance education experience might be. At least in the traditional aged student population, attitudes and intent to take distance education classes seem to be much lower than university administrators might realize, and students’ susceptibility to the influence of other, relevant peers might be an unexpected influence that could serve to make or break a distance education program.

On the other hand, it might also be that the best audience for potential student consumers of distance education are those with weakly held attitudes who might therefore not carry any negative baggage associated with being an early adopter of an emerging

technological innovation and whose attitudes and subsequent behavior might be more open to the influence of the right persuasive message.

On the basis of this study, understanding how to make traditional aged students more receptive to distance education may be the most important step in developing a successful distance education program aimed at undergraduates. After all, these are students who have generally spent the past 12 years being acculturated to the live classroom, “sage on the stage” lecture/decision model of classroom learning. That may change, as younger students who have experienced changes in K-12 instructional philosophy mature to college age; but, at least for now, the reality is that distance education represents an experience that may not be readily embraced. One of the key inferences of this study is that, in these circumstances, institutions might profit from taking a marketing, rather than a selling orientation, by looking first at what their traditional aged constituents view as positive attributes which might be incorporated into an alternate learning experience, rather than developing first and marketing later.

### **Conclusions and Directions for Further Research**

In the literature, Wilson, Dunn, Kraft, & Lisle (1989) reported that asking individuals to explain their attitude toward an attitude object could reduce attitude-behavior consistency. This could be the case if, for example, subjects' attitudes were less the product of rational thought and decision-making than a result of spontaneous and automatic processing, based on an immediate response. In such an instance, when subjects are asked to explain their attitudes, they retrieve whatever information they can find in memory. Since this information may not be complete, or consistent with what

they actually feel, they end up revising their attitude to reflect what they think they know about the attitude object.

Wilson et al. suggested that this effect is less likely to occur when attitudes are based on conscious deliberation formed on the basis of direct experience with the attitude object and more likely to occur when attitudes are affectivity formed, such as the result of persuasive influences. In the present study, which asked respondents to write down and then evaluate by means of ranking their thoughts and feelings about distance education, as well as answer a series of attitude-elicitation items, the indirect experience subjects may have been led to "reason about their feelings," a process which might have effected their attitude and subsequently impacted their behavioral intent. The direct experience subjects, on the other hand, were able to engage in more conscious deliberation as a function of their experience when asked to report their attitudes towards distance education at T2. If so, then, this might provide the basis for a future study that would attempt to further explore how indirect experience subjects arrive at their attitudinal evaluations of a technological innovation.

In terms of further research focusing on the effect of experience on attitude behavior correspondence in distance education, there seem to be additional opportunities to examine the effect of moderating variables on weakly held attitudes. This could involve investigating the effect of strengthening the normative stimulus, which, in the present study, might have been weakened by the fact that some aspects that relate to message effects in media, such as repetition and establishing message credibility, were not addressed.

Another area worthy of further study is to explore the perceived behavioral control construct more fully in this context, which might involve using a message stimulus designed to enhance the salience of perceived behavioral control (positive and negative), as well as break it down into its components of efficacy about one's ability to engage in the target behavior and perceptions of the degree of control one has over the behavior in question. Finally, it may also be important to examine the impact of couching the message stimulus and distance education experience in a variety of different media. Does medium make a difference in terms of the impact of the moderating message stimulus on strong and weakly held attitudes? Does the "flavor" of distance education matter? There may be some differences in subjects' perceptions of the various configurations of technology based distance education that could have bearing on the strength and polarity of attitudes, as well as the attitude behavior correlation.

Other possibilities for further research include changing some of the experimental conditions of the current study. For example, rather than using a simulated distance education module, a new experiment might be based on looking at two concurrent sections of the same course—one delivered throughout the semester via distance education and one delivered in the live classroom. In such an instance, a stronger incentive might also be used (possibly monetary) in an attempt to limit attrition and non-compliance, such as talking across cells. Finally, a subsequent investigation of these constructs might involve using other theories of persuasion to focus on the indirect experience subjects in an attempt to understand the factors that led to formation of their attitudes toward the target behavior.

One of the inferences of the present study that might have some salience for researchers of other communication-based technological innovations is the difficulty of making generalizations about shared audience perceptions when the innovation in question is relatively new and ultimately characterized by a highly individualized experience set. Results in this study seem to be indicating that one distance education experience may not be very generalizable to another and that when we seek to discuss “distance education,” or any similar highly individualized technological innovation experience, in terms of some unidimensional effect or set of effects, we may not be saying very much.

As in technology based distance education, receiver-driven experiences which are, by their definition, uniquely individualized down to the single unit level represent a new and exciting challenge for new media researchers. From a theoretical perspective, new media is an emerging, but still relatively young, phenomenon in mass communications. Many researchers are attempting to understand new media in terms of the major mass communications theories, and in so doing, establish differences and similarities with respect to traditional media. Mass communication theorists see new media as both similar to and divergent from other media with respect to interactivity, convergence aspects, and interpersonal as well as one-to-many communication capabilities. To that end, within the domain of distance education, there is still much more to be done as we attempt to understand how technologically innovative delivery methods affect individual attitudes and behaviors as shaped by their experience.

APPENDIX A.  
NORMATIVE MESSAGE STIMULI

**Stimulus 1A. Positive Normative Stimulus**

From a recent opinion poll of students at the University of Florida:

**Eighty-eight Percent of UF Students Surveyed  
Say They are in Favor of Distance Education**

In conjunction with the implementation of the University of Florida's new computing requirement, researchers at the university recently conducted a survey of student attitudes toward using technology-based distance education methods to deliver more classes for undergraduates. The survey described "technology based distance education" as courses in which the lecture was conducted using video; lecture notes and assignments were available on the Internet; and instructor and students communicated solely through email and online bulletin board sessions.

According to the survey, 88% of students who were questioned said they were in favor of the university investing in distance education in order to offer more undergraduate courses delivered in this method. Seventy per cent of students surveyed stated that they would be interested in taking a distance education course like the ones described in the survey in the next year.

**Stimulus 1B. Negative Normative Stimulus**

From a recent opinion poll of students at the University of Florida:

**Eighty-eight Percent of UF Students Surveyed  
Say They Oppose Distance Education**

In conjunction with the implementation of the University of Florida's new computing requirement, researchers at the university recently conducted a survey of student attitudes toward using technology-based distance education methods to deliver more classes for undergraduates. The survey described "technology based distance education" as courses in which the lecture was conducted using video; lecture notes and assignments were available on the Internet; and instructor and students communicated solely through email and online bulletin board sessions.

According to the survey, 88% of students who were questioned said they were opposed to the university investing in distance education in order to offer more undergraduate courses delivered in this method. Only thirty per cent of students surveyed stated that they would be interested in taking a distance education course like the ones described in the survey in the next year.

## APPENDIX B MODERATING VARIABLES IN THE STUDY

### **Attitude (General and Specific)**

Within the context of this study, attitude can be thought of as an evaluation perception that represents a link between the representation of an attitude object and its evaluation in memory (Fazio, 1986). Attitude may vary along a continuum ranging from positive to neutral to negative, i.e., valence, and extremity (degree of favorability). Attitudes can affect judgments, and the way we process information (Krosnick & Petty, 1995), in that certain attitudes come to mind more readily and/or lead to certain decisions or manifestations of behavior. Beliefs, and one's evaluation of the strength and likelihood of the outcome of one's beliefs, influence attitude formation; the general or specific nature of an attitude may correspondingly be more effective at influencing a more general or more specific target behavior (Fishbein & Ajzen, 1975).

For the purposes of this study, both general attitude toward distance education and more specific attitudes toward taking a technology-based distance education course will be measured, in accordance with Fishbein and Ajzen's compatibility principle (1975). This will make it possible to determine not only whether the independent variables of direct experience and the normative message stimuli affect attitudes, but also to what degree the manipulations influence more general vs. more specific attitudes toward the target behavior of taking a distance education class.

In accordance with this design, general and specific attitudes will be measured on the basis of bipolar seven point Likert type scales.



### **Attitude Strength**

Attitude strength will be manipulated on the basis of the assumption that the direct experience condition will lead to greater attitude strength, and subsequently, a stronger attitude-behavior correlation than theoretically less strongly held attitudes that are based on indirect experience.

Additionally, attitude strength will be measured by adapting Fazio's (1986) scale items which measure attitude strength on the basis of an index of items comprised of measures of attitude confidence, clarity and certainty. These measures will be used to assess subjects' perceptions about the strength of both their attitudes toward distance education and the message stimuli to which they were exposed. Subjects' self-reports of the attitude strength measures will be collected via seven point Likert-type scales for these dimensions.

### **Attitude Accessibility**

In this study, attitude accessibility is primarily being indirectly manipulated as a product of the direct experience manipulation. According to the literature, one way in which direct experience might influence attitudes is through making these attitudes more accessible. According to Fazio's (1986) process model, accessibility is a way in which attitudes become activated, leading to perception, definition of the event and then behavior.

Since attitude accessibility is presumed to be inherent in the direct experience manipulation, no hypotheses directly related to it have been generated for this study. As a control on its effect, however, two scale items based on a self-report measure of attitude accessibility have been included.

### **Beliefs and Belief Strength**

A set of beliefs about distance education will be elicited from all subjects by utilizing the Petty and Caccioppo thought box listing technique (Petty & Caccioppo, 1977). Subjects will be instructed to read the following definition of technology-based distance education:

Technology-based distance education can be defined as education at a distance, in which students and instructors do not meet physically in the classroom, but instead make use of communications technologies such as the World Wide Web and the Internet, and video or videoconferencing to see each other, lecture and ask questions and disseminate and receive assignments and other evaluation tools.

Technology-based distance education courses and programs are beginning to be offered in greater numbers by colleges and universities around the country to students of all ages, backgrounds and disciplines.

Subjects then will be asked to list up to six thoughts in boxes provided on their questionnaire form. After listing their beliefs, subjects will then be given a set of scales which will ask them to rank each belief according to its favorability, as well as rate it according to their evaluation of the likelihood of the truth and favorability of its outcome.

### **Subjective Norms, Norms and Motivation to Comply**

Fazio's process model is based on the concept that attitudes influence behavior through their mediating effect on perceptions. Attitude-behavior consistency research indicates that this process is sometimes prevented from reaching its conclusion by the impact of certain moderating factors. Research conducted by Fazio (1986), Fishbein and Ajzen (1974, 1975) and others (Schofield, 1975; Warner & DeFleur, 1969) has found that norms were one such factor. Within certain contexts, such as social norms or consumer behavior, normative knowledge may outweigh the impact of attitudes. On the other hand,

this does not hold true in all situations. For example, within the context of adoption behaviors, where the subject may feel that his or her normative referents could not possess the knowledge or experience to make an evaluation, norms may have limited effects. Given the above, one of the questions this study seeks to answer is to what extent a manipulation that makes norms more salient, by indicating to a subject that his or her normative referents have been able to make an evaluation of the adoption behavior, influences subsequent attitude and behavior.

To that end, for this study, subjective norms will be measured as a function of the weighting of scale items designed to assess the influence of relevant norms and their importance in terms of subsequent behavior (motivation to comply).

#### **Perceived Behavioral Control and its Antecedents, Control Beliefs and Their Evaluation**

Perceived behavioral control measures to what extent a behavior is controllable, i.e., under a person's control. This is based on the concept that behavior may be influenced by factors outside a person's control, such as access or efficacy. According to Bandura's social learning theory (1986), individuals may be discouraged from engaging in a behavior because they doubt their ability to perform it (efficacy expectancy). On the other hand, they might feel confident that they can perform a behavior, but may be either prevented from doing so by circumstance, or be reluctant to do so due to a perception that it will not lead to a desired outcome (outcome expectancy). Within the TOPB testing framework, Ajzen built on this concept by stipulating that if a behavior is likely to be influenced by factors outside a person's control, then the extent to which the behavior is

under the subject's volitional control must be considered (Ajzen, 1987, 1991). PBC as it is usually measured therefore included both efficacy-based and control based-measures.

For this study, PBC will be measured as a function of the weighting of perceptions of the degree of control a subject feels over the adoption behavior, and an evaluation of the degree of efficacy the subject feels about his or her ability to perform the behavior.

APPENDIX C  
COPY OF PRETEST QUESTIONNAIRE

**Questionnaire on Student Attitudes**

Directions: In a few moments, you will see and hear an excerpt from an introductory communications course here at the university. After the tape is done, please read the description of the course on the next page, then turn the page again, read the directions and answer the questions. Thanks again for your assistance.

After viewing the video tape lecture module, please read the following:

The excerpt you have just seen is part of a module from a section of PUR 3000. This module includes video taped lectures from the instructor, plus a class website which includes lecture notes and an online WWW bulletin board forum for discussion questions.

**GO TO THE NEXT PAGE**

**Part I.** Please take a few moments to review the following definition containing information relevant to the rest of this study. After you have reviewed the definition, read the instructions to complete the rest of the questionnaire. Thank you for your participation.

*Technology based distance education is a form of education which involves students learning at a distance. Through use of communications technologies, such as the Internet, the World Wide Web and video, students can see and hear and instructor's lecture, discuss and participate with the instructor and other students through email and online discussion forums and even take and submit a quiz online.*

**Based on the above, please answer the following questions to the best of your ability:**

5. The module from PUR 3000 which I have just seen is an example of technology-based distance education.

Agree    1       2       3       4       5       6       7       Disagree

6. Based on your evaluation of the module, how accurately does it follow the definition of technology based distance education which you read earlier in this questionnaire?

Accurate    1       2       3       4       5       6       7       not at all accurate

7. What is your overall evaluation of the course module you just saw?

Very well done    1       2       3       4       5       6       7       very poorly done

**Part II. Please circle the answer that best describes your response.**

**On a scale from one to seven, please indicate your attitudes towards technology based distance education.**

**My attitude towards technology based distance education is:**

4. Positive    1    2    3    4    5    6    7    Negative

5. Good    1    2    3    4    5    6    7    Bad

6. Favorable    1    2    3    4    5    6    7    Unfavorable

7. Pro    1    2    3    4    5    6    7    Con

8. I find technology based distance education:

Appealing    1    2    3    4    5    6    7    Unappealing

9. I \_\_\_\_\_ technology based distance education.

Like    1    2    3    4    5    6    7    Dislike

**Part III. Please take a few moments to review the attached message on the next page containing information relevant to the rest of this study.** After you have reviewed the message, turn the page and read the instructions to complete the rest of the questionnaire. Thank you for your participation.

From a recent opinion poll of students at the University of Florida:

**Eighty-eight Percent of UF Students Surveyed  
Say They are in Favor of Distance Education**

In conjunction with the implementation of the University of Florida's new computing requirement, researchers at the university recently conducted a survey of student attitudes toward using technology-based distance education methods to deliver more classes for undergraduates. The survey described "technology based distance education" as courses in which the lecture was conducted using video; lecture notes and assignments were available on the Internet; and instructor and students communicated solely through email and online bulletin board sessions.

According to the survey, 88% of students who were questioned said they were in favor of the university investing in distance education in order to offer more undergraduate courses delivered in this method. Seventy per cent of students surveyed stated that they would be interested in taking a distance education course like the ones described in the survey in the next year.

**GO TO NEXT PAGE**



10. I have not had any experience with distance education in the previous year.

1. yes
2. no

11. A clear majority of students on this campus are in favor of technology based distance education.

Strongly agree	1	2	3	4	5	6	7	Strongly
disagree								

12. My best guess is \_\_\_\_\_% of students are in favor of distance education at this university.

1. 10-20%
2. 20-40%
3. 40-60%
4. 60-80%
5. 80-100%

13. Gender

1. male
2. female

14. Year in school

1. freshman
2. sophomore
3. junior
4. senior
5. grad

15. Do you own a computer?

1. yes
2. no

**Please rate each of the following according to your level of agreement with each statement.**

**1=Strongly disagree; 2=Disagree; 3=Mildly disagree; 4=Mildly agree; 5=Agree; 6=Strongly agree.**

16. I would feel confident working with computers.

Strongly disagree      1      2      3      4      5      6      Strongly agree

17. I do as little work with computers as possible.

Strongly disagree      1      2      3      4      5      6      Strongly agree

18. I could get good grades in a course which involved using computers.

Strongly disagree      1      2      3      4      5      6      Strongly agree

19. I enjoy working with computers.

Strongly disagree      1      2      3      4      5      6      Strongly agree

APPENDIX D  
QUESTIONNAIRE INSTRUMENT USED IN THE EXPERIMENT

Section 1. Statement of Beliefs

**Refer to or detach the following page from the rest of the booklet because you will need your answers to guide you in filling out the next section. Please fill out this page, and keep it next to you so you can use it in recording your answers for the next section.**

**Directions:** Please read the passage on the following page about technology-based distance education and then list in the boxes below all the feelings you have about distance education and why you feel the way you do. That is, write down all of your thoughts and feelings that are relevant to your attitude, and try to describe the reasons for your feelings. Turn the page when you are ready to begin.

Technology based distance education is a form of education which involves students learning at a distance. Through use of communications technologies, such as the Internet, the World Wide Web and video, students can see and hear and instructor's lecture, discuss and participate with the instructor and other students through email and online discussion forums and even take and submit a quiz online.

Please list your thoughts in the boxes:

A.
B.
C.
D.
E.
F.

**Part II. Section 2. (Please use previous page as a guide to answering these questions.)**

**After you have filled in the boxes with your thoughts, please rate each of the listed thoughts on the following scales:**

Rank each of your listed thoughts according to how favorable/unfavorable you think each is towards distance education (one = most favorable; six = least favorable):

1. Thought #1 \_\_\_\_\_
2. Thought #2 \_\_\_\_\_
3. Thought #3 \_\_\_\_\_
4. Thought #4 \_\_\_\_\_
5. Thought #5 \_\_\_\_\_
6. Thought #6 \_\_\_\_\_

**Please circle the answer that best describes your response.**

7. How likely or unlikely is it that Thought #1 is true?

Unlikely	1	2	3	4	5	6	7	Likely
----------	---	---	---	---	---	---	---	--------

8. Is Thought #1 good or bad?

Bad	1	2	3	4	5	6	7	Good
-----	---	---	---	---	---	---	---	------

9. How likely or unlikely is it that Thought #2 is true?

Unlikely	1	2	3	4	5	6	7	Likely
----------	---	---	---	---	---	---	---	--------

10. Is Thought #2 good or bad?

Bad	1	2	3	4	5	6	7	Good
-----	---	---	---	---	---	---	---	------

11. How likely or unlikely is it that Thought #3 is true?

Unlikely	1	2	3	4	5	6	7	Likely
----------	---	---	---	---	---	---	---	--------

12. Is Thought #3 good or bad?

Bad	1	2	3	4	5	6	7	Good
-----	---	---	---	---	---	---	---	------

13. How likely or unlikely is it that Thought #4 is true?

Unlikely	1	2	3	4	5	6	7	Likely
----------	---	---	---	---	---	---	---	--------

14. Is Thought #4 good or bad?  
 Bad            1        2        3        4        5        6        7        Good
15. How likely or unlikely is it that Thought #5 is true?  
 Unlikely       1        2        3        4        5        6        7        Likely
16. Is Thought #5 good or bad?  
 Bad            1        2        3        4        5        6        7        Good
17. How likely or unlikely is it that Thought #6 is true?  
 Unlikely       1        2        3        4        5        6        7        likely
18. Is Thought #6 good or bad?  
 Bad            1        2        3        4        5        6        7        Good

**Part III. Please circle the answer that best describes your response.**

**On a scale from one to seven, please indicate your attitudes towards technology based distance education.**

**My attitude towards technology based distance education is:**

19. Positive            1        2        3        4        5        6        7        Negative
20. Good               1        2        3        4        5        6        7        Bad
21. Favorable         1        2        3        4        5        6        7        Unfavorable
22. Pro                 1        2        3        4        5        6        7        Con
23. I find technology based distance education:  
 Appealing         1        2        3        4        5        6        7        Unappealing
24. I \_\_\_\_\_ technology based distance education.  
 Like                 1        2        3        4        5        6        7        Dislike

On a scale from one to seven, please indicate your attitudes towards taking a technology based distance education class within the next year which utilizes video of the instructor, lecture notes available on the Internet and an online WWW bulletin board for discussion questions:

**My attitude toward taking a technology based distance education class within the next year is:**

25. Positive      1      2      3      4      5      6      7      Negative

26. Good      1      2      3      4      5      6      7      Bad

27. Favorable      1      2      3      4      5      6      7      Unfavorable

28. Pro      1      2      3      4      5      6      7      Con

29. I find the thought of taking such a distance education class:  
     Appealing      1      2      3      4      5      6      7      Unappealing

30. I \_\_\_\_\_ distance education classes like the one described.  
     Like      1      2      3      4      5      6      7      Dislike

31. How confident are you of your evaluation of your feelings towards technology based distance education?

Very confident 1      2      3      4      5      6      7      not at all confident

32. How certain are you of your evaluation of your feelings toward technology based distance education?

Very certain      1      2      3      4      5      6      7      not at all certain

33. How certain are you of your evaluation of your feelings towards taking a technology-based distance education class in the next year?

Very certain      1      2      3      4      5      6      7      not at all certain

34. How likely is it that people who are important to you feel as you do towards (your taking) technology based distance education classes?

Likely      1      2      3      4      5      6      7      unlikely

35. How likely is it that your friends feel as you do towards your taking technology based distance education classes?

Likely      1      2      3      4      5      6      7      unlikely

36. How likely is it that your peers feel as you do towards your taking technology based distance education classes?

Likely                      1        2        3        4        5        6        7        unlikely

37. In general, people who are important to me feel technology based distance education is a good thing.

Do                              1        2        3        4        5        6        7        do not

38. In general, people who are important to me feel my taking a technology based distance education class would be a good thing.

Do                              1        2        3        4        5        6        7        do not

39. Most people important to me feel I should/should not take a technology based distance education class:

Should I                      2        3        4        5        6        7        should not

40. For me to take a technology based distance education course in the next year would be:

Very difficult              1        2        3        4        5        6        7        very easy

41. If I wanted to, it would be easy for me to take such a distance education course in the next year.

Strongly agree I            2        3        4        5        6        7        strongly disagree

42. How much control do you have over whether you take a technology based distance education course within the next year?

No control                      1        2        3        4        5        6        7        complete control

43. I feel in complete control of whether I take a technology based distance education course in the next year.

Completely false            1        2        3        4        5        6        7        completely true

44. Taking a technology based distance education course in the next year is

Up to me                      1        2        3        4        5        6        7        not up to me



**Part IV.**

**Directions:** As part of the outcome of this experiment, we plan to use the results to petition the university to fund more equipment for distance education classes, which would enable many more students to participate. Please help us by answering the following questions and then signing the attached form at the back of the booklet..

45. How likely would you be to take a technology based distance education class in the next year?

Unlikely                      1        2        3        4        5        6        7        Likely

46. How interested are you in taking a technology based distance education class in the next year?

Very interested            1        2        3        4        5        6        7        not interested

47. How willing would you be to support a new student fee, which would fund more equipment for technology based distance education classes?

Very willing                1        2        3        4        5        6        7        very unwilling

48. How supportive are you of the idea of a new student fee, which would fund more equipment for technology based distance education?

Very supportive            1        2        3        4        5        6        7        not at all supportive

49. Would you be willing to sign a petition supporting creation of a new student fee which would fund more equipment for technology based distance education?

1. yes
2. no

**If so, please place your signature on the attached petition. (See final page.)**

50. All other factors being equal, and assuming for the moment that classes you would want to and have the ability to take are offered in a distance education format, would you be willing to sign here next to this request committing you to take at least two more classes in your major as technology based distance education classes? (Keep in mind that your signing means you agree to take these classes as distance education classes)

1. yes
2. no

Signature \_\_\_\_\_ Date: \_\_\_\_\_

51. Would you be willing to join a group we are forming to advocate more distance education courses on campus? If so, indicate so by bubbling in "1" for yes on your form' if no, indicate so by bubbling in "2" for no on your form.

1. yes
2. no

52. Would you be willing to volunteer to work as an aid supporting technology based distance education on this campus? If so, indicate so by bubbling in "1" for yes on your form' if no, indicate so by bubbling in "2" for no on your form.

1. yes
2. no

#### Part VI.

Please circle the answer that best fits.

53. During this semester for this class, I have taken class:

1. in the traditional classroom setting
2. through a technology based distance Ed module utilizing video of the instructor, lecture notes available over the Internet and an online bulletin board for discussion questions.

54. As part of this questionnaire, I was exposed to a print message that contained information about

1. the course I am taking now
2. student opinions about distance education at this university.

55. At the beginning of the survey, I was given information about the percentage of students who have an opinion about technology based distance education.

Strongly agree 1      2      3      4      5      6      7      Strongly disagree

56. A clear majority of students on this campus are in favor of technology based distance education.

Strongly agree 1      2      3      4      5      6      7      Strongly disagree

57. My best guess is \_\_\_\_\_% of students are in favor of distance education at this university.

1. 10-20%
2. 20-40%
3. 40-60%
4. 60-80%
5. 80-100%

58. Gender

1. male
2. female

59. Year in school

1. freshman

2. sophomore
3. junior
4. senior
5. grad

60. Do you own a computer?

1. yes
2. no

**Please rate each of the following according to your level of agreement with each statement.**

**1=Strongly disagree; 2=Disagree; 3=Mildly disagree; 4=Mildly agree; 5=Agree; 6=Strongly agree.**

61. I would feel confident working with computers.

Strongly disagree      1      2      3      4      5      6      Strongly agree

62. I do as little work with computers as possible.

Strongly disagree      1      2      3      4      5      6      Strongly agree

63. I could get good grades in a course which involved using computers.

Strongly disagree      1      2      3      4      5      6      Strongly agree

64. I enjoy working with computers.

Strongly disagree      1      2      3      4      5      6      Strongly agree

**Petition to Create a New Student Fee to Fund More Equipment for Technology  
based Distance Education at This University**

In signing this petition, I, the undersigned, agree to support a \$10 a semester fee on all students, retroactive to this semester, to support funding for more equipment to enable more students to take distance education classes at this university,

**Signed** \_\_\_\_\_ **Date** \_\_\_\_\_

APPENDIX E  
INFORMED CONSENT PROCESS AND DEBRIEFING FORM

**Informed Consent Process**

My name is Tracy Irani, and I am a doctoral student in the university's College of Journalism and Communication. I am conducting a study designed to assess respondents' thoughts and options about technology-based education. As such, I am asking that you complete the following questionnaire, which should take about ten minutes to complete.

Participation in this study is entirely voluntary. There are no anticipated risks or benefits to participating. In filling out this questionnaire, you have the right to privacy and your responses will be kept entirely confidential. You are under no obligation to complete this questionnaire, and you may quit at any time.

Thank you for your participation. If you have any questions about this research project, please contact me at 392-0502 or my faculty supervisor, Dr. Michael Weigold, at 392-8099. Questions or concerns about research participant's rights may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, FL 32611; ph (352) 392-0433.

**Directions:** This questionnaire is designed to assess your thoughts about education. As such, there are no anticipated risks, compensation or other direct benefits to you as a participant in this survey. You are free to withdraw your consent to participate at any time and may discontinue your participation in the survey at any time without consequence.

If you wish to participate in this study, please sign on the line which follows:

Name \_\_\_\_\_ Date \_\_\_\_\_

**Debriefing Form**

Thanks for your participation in this survey. The goal of this research was to assess how your attitudes and experience might motivate you to engage in behaviors related to distance education. Whether you signed the petition or the statement on taking more distance education courses at the university, you are not bound to your decision. The purpose of asking you to sign was to assess your behavioral response only, and the information will not be used.

Thanks for your participation. If you have any questions about this research project, please contact me at 392-0502 or my faculty supervisor, Dr. Michael Weigold, at 392-8099. Questions or concerns about research participant's rights may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, FL 32611; ph (352) 392-0433.

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## BIOGRAPHICAL SKETCH

A native Pennsylvanian, Tracy Irani was born and raised in Pittsburgh. She has a B.A. in journalism and communication from Point Park College in Pittsburgh and an M.A. in communication from Duquesne University.

Tracy has extensive teaching and industry experience. While working on her master's degree, she taught full-time as an instructor for Duquesne; while finishing up her doctoral course work, she also served as an instructor in the Department of Agricultural Education and Communication in UF's College of Agriculture.

Before returning to academia to complete her graduate studies, Tracy worked in advertising, marketing, and public relations. She was a vice president at two advertising agencies, as well as serving as a regional marketing manager for Pepsi.

Starting in August 1999, Tracy will assume a new position as an assistant professor in UF's Agricultural Education and Communication Department. She is married, and she and her husband Jim have three children—Sarah, Jessica, and Andrew.

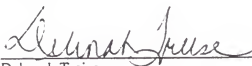
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Michael F. Weigold, Chair  
Associate Professor of Journalism and  
Communications


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Deborah Treise  
Associate Professor of Journalism and  
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Gail F. Baker  
Association Professor of Journalism and  
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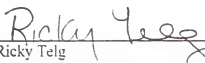


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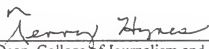


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This dissertation was submitted to the Graduate Faculty of the College of Journalism and Communications and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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